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Network Generation and Installation Guide
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The *DECnet-RSX Network Generation and Installation Guide* describes how to generate and install the software for a DECnet-RSX node.

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Contents

Page

Preface

Chapter 1 Introduction

1.1 Making Preliminary Decisions 1-1
1.2 Performing a SYSGEN 1-2
1.3 Performing a PREGEN 1-2
1.4 Performing a NETGEN 1-2

  1.4.1 NETGEN Dialog Format 1-2

    1.4.1.1 Explanatory Text 1-3
    1.4.1.2 Response Formats 1-3
    1.4.1.3 Responses for End of Section and Break Questions 1-4

  1.4.2 NETGEN Organization 1-5
  1.4.3 NETGEN Operating Modes and Saved-Response Files 1-7

    1.4.3.1 Question and Answer Mode 1-7
    1.4.3.2 Dry Run Mode 1-7
    1.4.3.3 Restore Mode 1-7
    1.4.3.4 Component Mode 1-7
    1.4.3.5 Saved-Response Files 1-7

  1.4.4 NETGEN Output 1-8

    1.4.4.1 NETINS.CMD 1-9
    1.4.4.2 NETREM.CMD 1-9
    1.4.4.3 NETCFE.CMD 1-9
    1.4.4.4 NETCFG.TXT 1-9
    1.4.4.5 CETAB.MAC 1-9

1.5 Post-NETGEN Considerations 1-9

  1.5.1 Installing DECnet 1-9
  1.5.2 Testing a Newly Installed Network 1-9
  1.5.3 Reconfiguring and Tuning after NETGEN 1-10

    1.5.3.1 Configuration File Editor (CFE) Commands 1-10
    1.5.3.2 Network Control Program (NCP) Commands 1-10
    1.5.3.3 Virtual Network Processor (VNP) Commands 1-10

  1.5.4 Duplicating Network Generations 1-10

Chapter 2 Planning DECnet

2.1 Configuration Requirements to Support DECnet-RSX Software 2-1
  2.1.1 Requirements for the Host System. 2-1
  2.1.2 Requirements for the Target System 2-2
2.2 Identifying Nodes 2-2
  2.2.1 Node Addresses. 2-2
  2.2.2 Node Names 2-2
2.3 Specifying Routing Parameters 2-3
2.4 Selecting DECnet Components 2-4
  2.4.1 Optional DECnet Components. 2-4
    2.4.1.1 KMC Microcode Loader (KMCL). 2-4
    2.4.1.2 General Microcode Loader (MLD) 2-4
    2.4.1.3 Network Event Logger (EVL/EVC) 2-4
    2.4.1.4 Direct Line Access (DLX) 2-5
    2.4.1.5 Network Control Program (NCP) 2-5
    2.4.1.6 Network Management Device Driver (NMDRV) 2-5
    2.4.1.7 Digital Communications Process (DCP) 2-5
    2.4.1.8 Ethernet Protocol Manager (EPM) 2-5
    2.4.1.9 NETFOR.OLB and NETLIB.MLB 2-5
    2.4.1.10 Network Information and Control Exchange (NICE) . . . 2-5
    2.4.1.11 Event Logging Receiver (EVR) 2-5
    2.4.1.12 Network Display Utility (NTD). 2-5
    2.4.1.13 Link Watcher (LIN) 2-8
    2.4.1.14 Network Verification Program (NVP) 2-8
    2.4.1.15 Down-line System Loader (DLL) 2-8
    2.4.1.16 Up-line System Dumper (DUM) 2-8
    2.4.1.17 Console Carrier Requester (CCR) 2-8
    2.4.1.18 Host Task Loader (HLD). 2-8
    2.4.1.19 Satellite Task Loader (SLD) 2-8
    2.4.1.20 Network File Transfer Utility (NFT) 2-8
    2.4.1.21 File Transfer Spooler (FTS) 2-9
    2.4.1.22 File Access Listener (FAL) 2-9
    2.4.1.23 Command File/Batch File Submission Task (MCM) . . . 2-9
    2.4.1.24 Remote Terminal Utility RMTACP (RMT/RMTACP) . . 2-9
    2.4.1.25 Remote Terminal Host ACP HTDRV (RMHACP/HTDRV) 2-9
    2.4.1.26 Network Command Terminal Server Task (NCT) . . . 2-9
    2.4.1.27 Remote Command Terminal Host (RTH) 2-9
    2.4.1.28 Terminal Communications Utility (TLK) 2-10
    2.4.1.29 TLK Server Task (LSN) 2-10
    2.4.1.30 Remote Task Control Utility (TCL). 2-10
  2.4.2 Optional PSI Components. 2-10
    2.4.2.1 Data Link Mapping (DLM) 2-10
    2.4.2.2 Trace Capture Task (TRA). 2-10
    2.4.2.3 Trace Interpreter Task (TRI) 2-10
    2.4.2.4 X.29 Terminal Access ACP with HTDRV (X29ACP). . 2-10
    2.4.2.5 KMX Microcode Dumper (DUK). 2-11
    2.4.2.6 KMX Microcode Dump Analyzer (KDA) 2-11
    2.4.2.7 High Level Language Library (PSIFOR.OLB) 2-11
    2.4.2.8 PSI Macro Library (PSI.MLB) 2-11

Chapter 3 Getting Ready for NETGEN

3.1 Deciding Partition Layout 3-1
  3.1.1 RSX-11M-PLUS Systems. 3-2
  3.1.2 System Sizes 3-2
  3.1.3 RSX-11M Systems 3-2
    3.1.3.1 Small RSX-11M Systems 3-5
    3.1.3.2 Medium RSX-11M Systems 3-6
    3.1.3.3 Large RSX-11M Systems 3-7
  3.1.4 RSX-11M DECnet Loading Problems 3-8
  3.1.5 Special Considerations for NMVACP (RSX-11M only) 3-9
  3.1.6 RSX-11S Systems 3-10
  3.1.7 Pre-SYSGENed System (RSX-11M-PLUS Only). 3-11
3.2 Performing SYSGEN. 3-11
  3.2.1 SYSGEN Support for DECnet. 3-12
  3.2.2 RSX and DECnet Communications Devices 3-12
  3.2.3 Standard Function System (RSX-11M only) 3-13
  3.2.4 System Controlled Partitions (RSX-11M/S only) 3-13
  3.2.5 Checkpointing Support (RSX-11M only). 3-14
  3.2.6 Support for SLD (RSX-11S only) 3-14
  3.2.7 Including NETPAN (Up-line Panic Dump) (RSX-11S only) . . 3-14
  3.2.8 Terminal Driver Support 3-15
  3.2.9 Queued File Access Requests (RSX-11M/11M-PLUS) 3-16
  3.2.10 Large or Small Executive (RSX-11M/S only). 3-16
  3.2.11 Editing SYSVMR.CMD (RSX-11M/S only) 3-17
  3.2.12 Adding CEXPAR (RSX-11M/S only) 3-18
  3.2.13 Adding Other Partitions (RSX-11M/S only) 3-20
3.3 PREGEN 3-20
  3.3.1 Overview of Standard PREGEN Operation. 3-21
  3.3.2 Overview of Small Dual-Disk PREGEN Operation 3-22
  3.3.3 Copying Distribution Media to Disks 3-23
  3.3.4 Starting PREGEN 3-24
    3.3.4.1 Disk Distribution Media 3-24
    3.3.4.2 Magnetic Tape Distribution Media 3-25
  3.3.5 Understanding the PREGEN Dialog 3-26
  3.3.6 Standard PREGEN. 3-28
  3.3.7 PREGEN for a Small Dual-Disk System 3-32
  3.3.8 Sample Standard PREGEN 3-34
  3.3.9 Sample Small Dual-Disk PREGEN 3-36

Chapter 4 NETGEN Dialog: NET

4.1 Starting NETGEN. 4-1
  4.1.1 Running NETGEN on an RSX-11M/11M-PLUS System 4-1
  4.1.2 Running NETGEN on a VAX/VMS System 4-2
4.2 Initialization Questions. 4-3
4.3 Define the Target System 4-12
4.4 Define the System Lines 4-16
4.5 Define the CEX System 4-26

4.6 Define the Communications Executive Support Components 4-29
4.7 Define the System Management Utilities 4-34
4.8 Define the CEX Products 4-37
4.9 Complete the CEX System Definitions 4-38
4.10 Build the CEX System 4-40
4.11 Generation Clean-up 4-41

Chapter 5 NETGEN Dialog: DEC

5.1 Define the Target and Remote Nodes 5-1
5.2 Define the DECnet Communications Components 5-7
5.3 Define the DECnet Network Management Components 5-11
5.4 Define the DECnet Satellite Support Components 5-16
5.5 Define the DECnet File Utilities 5-21
5.6 Define the DECnet Terminal and Control Utilities 5-27

Chapter 6 NETGEN Dialog: PSI

6.1 Specify Target Network Characteristics 6-1
6.2 Specify Local DTEs 6-4
6.3 Specify Incoming Call Destinations 6-8
6.4 Specify Logical Names for Remote DTEs 6-13
6.5 Specify Required Components 6-14
6.6 Specify Optional Components 6-16

Chapter 7 Installing DECnet

7.1 Installing DECnet on RSX-11M/M-PLUS Systems 7-1
  7.1.1 Modifying NETINS.CMD 7-3
  7.1.2 Using VMR to Install Network Tasks 7-6
7.2 Installing DECnet-11S Systems 7-6
  7.2.1 Installing Tasks Using VMR commands 7-6
  7.2.2 Loading the Network Using VNP Commands 7-8
7.3 Installing a DECnet-RSX-11S System on a VAX/VMS System 7-8
  7.3.1 Establishing VAX/VMS Privileges 7-9
  7.3.2 Installing Tasks Using VMR Commands 7-9
  7.3.3 Loading the Network Using VNP Commands 7-10

Chapter 8 Installing a Pregenned RSX-11M-PLUS End Node

8.1 Preliminary Considerations 8-1
8.2 Dialog Format 8-2
  8.2.1 Explanatory Text 8-2
  8.2.2 User Responses 8-2
  8.2.3 Break Responses 8-2
8.3 The Pregenned RSX-11M-PLUS Dialog 8-3

Appendix A Sample NETGEN Dialog

Appendix B How to Include NETPAN (Up-line Panic Dump) in an RSX-11S System

Appendix C Rebuilding CETAB, CEX, and DDMS

Examples

7-1 Typical NETINS.CMD for an RSX-11S System 7-7

Figures

1-1 Sections within the NETGEN Process 1-6
3-1 Partition Layout after SYSGEN (CEXPAR added) 3-3
3-2 Partition Layout for Small RSX-11M Systems 3-6
3-3 Partition Layout for Medium RSX-11M Systems 3-7
3-4 Typical Partition Layout 3-8
4-1 NET - Section 1 - General Initialization 4-4
4-2 NET - Section 2 - Define the Target System 4-12
4-3 NET - Section 3 - Define the System Lines 4-17
4-4 NET - Section 4 - Define the CEX System 4-26
4-5 NET - Section 5 - Define the Comm Exec Support Components 4-29
4-6 NET - Section 6 - Define the System Management Utilities 4-34
4-7 NET - Section 8 - Complete the CEX System Definitions 4-38
5-1 DEC - Section 1 - Define the Target and Remote Nodes 5-2
5-2 DEC - Section 2 - Define the DECnet Communications Components 5-7
5-3 DEC - Section 3 - Define the DECnet Network Management Components 5-11
5-4 DEC - Section 4 - Define the DECnet Satellite Support Components 5-16
5-5 DEC - Section 5 - Define the DECnet File Utilities 5-21
5-6 DEC - Section 6 - Define the DECnet Terminal and Control Utilities . 5-27
6-1 PSI - Section 1 - Specify Target Network Characteristics 6-2
6-2 PSI - Section 2 - Specify Local DTEs 6-4
6-3 PSI - Section 3 - Specify Incoming Call Destinations 6-9
6-4 PSI - Section 5 - Specify Required Components 6-14
6-5 PSI - Section 6 - Specify Optional Components 6-16
7-1 Installation Procedure for an RSX-11M/-11M-PLUS System 7-2

Tables

1-1 Summary of NETGEN Responses 1-4
1-2 Summary of NETGEN Output Files 1-8
2-1 Target Disk Capacity 2-2
2-2 Supported Communications Devices 2-3
2-3 Component Selection Summary for NETGEN 2-6
3-1 Approximate Sizes of Key Components 3-4
3-2 CEXPAR Base Addresses and Sizes 3-19
3-3 PREGEN Files 3-21
B-1 Reboot Addresses for the M9312 ROM B-4

Preface

The *Network Generation and Installation Guide* explains how to generate and install the software for a DECnet-RSX node. Network generation (NETGEN) is a procedure that allows you to generate a DECnet node that is configured to your specific networking requirements. This is done by answering a series of questions called a dialog.

This manual is designed for both DECnet-only users and DECnet users who purchase a license for the RSX-11 Packetnet System Interface (PSI) product. The PSI product allows you to access a Packet Switching Network (PSN) using the X.25 and X.29 protocols.

Intended Audience

This manual is intended for an advanced user or Digital software specialist responsible for generating and installing a DECnet node on an RSX-11M, RSX-11M-PLUS, or RSX-11S system. The user must also verify that this new node is functioning correctly.

Structure of this Manual

This manual is organized into eight chapters.

- **Chapter 1** provides introductory information regarding the steps you must perform before, during, and after a network generation (NETGEN).
- **Chapter 2** provides information for configuring your RSX system to support DECnet and contains descriptions to help you select the appropriate devices and DECnet components.
- **Chapter 3** provides information for determining partition layout, performing a system generation (SYSGEN), and performing a preliminary procedure called PREGEN.
- **Chapter 4** presents the first part of the NETGEN dialog called NET.
- **Chapter 5** presents the second part of the NETGEN dialog called DEC.
- **Chapter 6** presents the third part of the NETGEN dialog called PSI for users who have purchased a license for the RSX-11 PSI product.
- **Chapter 7** describes how to install and load DECnet on an RSX-11M, RSX-11M-PLUS, or RSX-11S system.
- **Chapter 8** provides information for installing a pregenned RSX-11M-PLUS end node.

This manual also contains three appendixes:

- **Appendix A** presents a sample NETGEN dialog.
- **Appendix B** describes how to include NETPAN (Network Up-line Panic Dump) for an RSX-11S system.
- **Appendix C** describes how to rebuild components that cannot be rebuilt using Component Mode (CETAB, CEX, DDMs).

Associated Documents

Users of this manual should have the following related manuals of the document set:

- *Introduction to DECnet* (order no. AA-J055D-TC)
- *Overview of DECnet-RSX* (order no. AA-M096B-TC)
- *DECnet-RSX Guide to User Utilities* (order no. AA-H223C-TC)
- *DECnet-RSX Programmer's Reference Manual* (order no. AA-M098B-TC)
- *DECnet-RSX System Manager's Guide* (order no. AA-H224C-TC)
- *DECnet-RSX Postinstallation Checkout Procedures* (order no. AA-J319C-TK)

Users of this manual should have the following manuals available for system generation (SYSGEN) procedures:

- *RSX-11M System Generation and Installation Guide* (order no. AA-H625B-TC)
- *RSX-11M-PLUS System Generation and Installation Guide* (order no. AA-H431C-TC)
- *RSX-11S System Generation and Installation Guide* (order no. AA-2874E-TC)

Users who have purchased a license for the PSI product, should also have the PSI product manual set available for reference.

Acronyms

The following acronyms are used in this manual:

AUX	Auxiliary Process
CCR	Console Carrier Requester
CEX	Communications Executive
CFE	Configuration File Editor
DCP	Digital Communications Process
DDM	Device Driver Modules
DLL	Down-line System Loader
DLM	Data Link Mapping
DLX	Direct Line Access
DUK	KMX Microcode Dumper
DUM	Up-line System Dumper
ECL	End Communication Layer and Driver
EPM	Ethernet Protocol Manager
EVR	Event Logging Receiver
FAL	File Access Listener
FTS	File Transfer Spooler
HLD	Host Task Loader
KDA	KMX Microcode Dump Analyzer
KMCL	KMC Microcode Loader
LAB	LAP-B Protocol Handler
LIN	Link Watcher
LOO	Loopback Tester
LSN	TLK Server Task
MCM	Command File/Batch File Submission Task
MIR	Loopback Mirror
MLD	General Microcode Loader
NCP	Network Control Program
NCT	Network Control Terminal Task
NDA	Network Crash Dump Analyzer

NETACP	Network ACP
NETFOR.OLB	DECnet high level language library
NETLIB.MLB	DECnet MACRO-11 library
NFT	Network File Transfer Utility
NICE	Network Information and Control Exchange
NMDRV	Network Management Device Driver
NMVACP	Network Management Volatile ACP
NTD	Network Display Utility
NTDEMO	Network Display Server
NTINIT	Network Initializer
NTL	Network Loader
NVP	Network Verification Program
NW	NW: Device Driver
PLI	Packet Level Interface
PSI DDM	PSI Device Driver Modules
PSIFOR.OLB	High Level Language Library
PSI.MLB	PSI Macro Library
RCP	Routing Control Processor
RMHACP/HTDRV	Remote Terminal Host ACP HTDRV
RMT/RMTACP	Remote Terminal Utility RMTACP
SLD	Satellite Task Loader
TCL	Remote Task Control Utility
TLK	Terminal Communications Utility
TRA	Trace Capture Task
TRI	Trace Interpreter Task
VNP	Virtual Network Processor
XPT	Transport Task
X25ACP	Ancillary Control Processor for NW
X29ACP	X.29 Terminal Access ACP with HTDRV

Graphic Conventions

The following graphic conventions are used throughout this manual:

`CTRL/x`	The symbol `CTRL/x` refers to a control character keying sequence. Press the key labeled CTRL and the appropriate character key simultaneously when you see this symbol.
`MCR>`	Black lettering indicates information the system displays or prints.
`MCR> UMR`	Red lettering indicates user-entered information.
`>MOU` *dduu*`: NETGEN`	Italicized lowercase letters represent variables for which you must supply specific information.

Chapter 1
Introduction

This chapter introduces you to the steps you must perform before, during, and after network generation (NETGEN). These steps include: making preliminary decisions, performing a SYSGEN, performing a PREGEN (if necessary), performing a NETGEN, and understanding post-NETGEN considerations.

PREGEN is not required if you purchased an RSX-11M-PLUS pregenned end node kit (see Chapter 8). PREGEN is not required if you purchased RL02, RK06, or RK07 media and you are generating a DECnet only system (see Section 3.3).

SYSGEN is a preliminary procedure that establishes the RSX operating environment. PREGEN is a pre-NETGEN procedure that converts the distribution media (disk or magnetic tape) into the form required by NETGEN. NETGEN is an indirect command file procedure that generates the software for a DECnet node.

1.1 Making Preliminary Decisions

Before performing a NETGEN, make some preliminary decisions regarding the following:

- Decide what is needed to support your type of kit: full function (routing node or end node); end node; or RSX-11M-PLUS pregenned end node.
- Decide what communications device(s) you want for your target system (the system on which the DECnet node will run).
- Decide what optional DECnet components you want for your target system as described in Chapter 2, Table 2-3.
- Decide what library you want to use if your target system has support for the memory resident FCS library or the supervisor mode FCS library.

You also need to determine the partition layout for your system. On RSX-11M-PLUS and large RSX-11M systems, the partition layout supplied by your RSX system generation usually proves adequate. For other systems, you may need to modify the layout. (Sections 3.1 and 3.2 explain this procedure.)

1.2 Performing a SYSGEN

If you have not already performed a system generation for your target system, you must first do so (see Section 3.2). Even if you have previously performed a SYSGEN for the node, it may be necessary to perform the SYSGEN again so that your system provides the necessary support services for DECnet.

1.3 Performing a PREGEN

The PREGEN procedure converts the distribution media (disk or magnetic tape) into a form that is directly usable by NETGEN. You will have two distribution media, or three if you have purchased a license for the PSI product. PREGEN selects certain parts of each distribution medium and copies them to the working generation disk used to perform NETGEN. This provides NETGEN with the information it needs to perform the network generation and helps to minimize and, in most cases, to eliminate the swapping of disks later (see Section 3.3).

1.4 Performing a NETGEN

To perform a NETGEN you engage in a dialog with the NETGEN processor, basing your responses on information developed during the preliminary decision-making phase.

The following paragraphs describe the NETGEN dialog format, organization, and operating modes.

1.4.1 NETGEN Dialog Format

The NETGEN dialog format consists of sections with questions, optional explanatory text, formats for user responses, default values, and responses for end-of-section questions and break questions.

Each section is introduced with a header as shown in the following example:

```
; ==================================================
;  NET - Section 2 - Define the target system
; ==================================================
```

The header identifies: a specific part of NETGEN (NET); the section number within that part (Section 2); and then describes the purpose of the section (Define the target system).

1.4.1.1 Explanatory Text —

During the NETGEN dialog, you can read expanded information for a question. You elicit this text on a question by question basis by pressing the ESCAPE key ESC after the question is displayed. This causes the NETGEN command file to issue an explanation and then reissue the question. For example, if you press ESC in response to the question:

```
> 08.00 Is this generation to be a dry run? [D=N] [Y/N]:
```

NETGEN prints the following explanatory text and then repeats the question:

```
>;
>; If you answer YES to this question, the system you specify will not
>; actually be built. Your responses will be saved, however, and a real
>; generation may be performed later, using these saved responses.
```

1.4.1.2 Response Formats —

Your response to NETGEN questions will be one of three types:

1. YES/NO [Y/N]
2. Numeric [N]
3. Character string [S]

NETGEN's default answer for a YES/NO question is NO unless otherwise stated.

NOTE

> If you respond to most NETGEN questions using default answers, you will generate a working system.

Numeric responses are octal or decimal. In the example, [O R:1-377 D:5], O indicates the octal number, R indicates the range, and D indicates the default. In the example, [D R:1.-16. D:1.], the first D indicates the decimal number, R indicates the range, and the second D indicates the default. You do not need to include a decimal point after the number you enter; it is assumed.

Character string responses can include letters, numbers, and special characters. In the example, [*dduu*,D=DB01:][S], *dd* refers to two letters for the device, *uu* refers to two numbers for the unit; D refers to the default; and S refers to a string that can include letters, numbers and special characters. See Table 1-1 for a summary of NETGEN responses.

Table 1-1: Summary of NETGEN Responses

Response Type	**NETGEN displays:**	**You enter:**
YES/NO	[D N] [Y/N]:	Y to indicate YES, N to indicate NO, (or press RET for default NO).
Numeric Octal	[O R:*m*-*n*]:	An octal number in the range of *m* through *n*.
	[O R:*m*-*n* D:d]:	An octal number in the range of *m* through *n*, (or press RET to indicate that the default (*d*) should be used).
Decimal	[D R:*m*.-*n*.]:	A decimal number in the range of *m* through *n*.
	[D R:*m*.-*n*. D:*d*.]:	A decimal number in the range of *m* through *n*, (or press RET to indicate that the default (*d*.) should be used). You do not need to include a decimal point after the number you enter.
Character String	[S]:	A character string of any length.
	[*f*, D:*d*][S]:	A character string in the form *f* (such as *ddu*:), (or press RET to indicate that the default (*d*) should be used).
	[S R:*m*.-*n*.]:	A character string from *m* through *n* characters in length.

1.4.1.3 Responses for End-of-Section and Break Questions — Each NETGEN section ends with an end-of-section question as shown in the following example:

```
; <EOS> Do you want to:
*        <RET>-Continue, S-Skip, R-Repeat Section, P-Pause, E-Exit
```

Respond by entering one of the following options:

RET Continuing on to the next section. Responses are saved.

S Skipping a section or sections. Skip is an option provided in Restore Mode only and is used when you have chosen the option of changing your answers. Choosing Skip causes NETGEN to resume using your saved responses and prevents you from making any further changes to the remaining sections. This response cannot be used in the PSI section of NETGEN.

R Repeating the section you just completed. Responses are discarded, and the entire section is repeated.

P Pausing from the section. This response temporarily suspends the indirect command file, and gives you direct access to the operating system to perform a task.

The system displays one of the following messages:

AT.--PAUSING. TO CONTINUE, TYPE "RES *string*" or

AT.--PAUSING. TO CONTINUE, TYPE "UNS *string*"

After you have completed your task, you can continue processing by entering:

RES *string*

or

UNS *string*

Enter RES or UNS, depending upon which one of the above messages was displayed and enter the same *string* contained within that message. After the Pause, the end-of-section question is repeated.

E Exiting from NETGEN. Responses are saved, allowing you to terminate the generation, and later return to the dialog using Restore Mode. Entering CTRL/Z in response to an EOS question is identical to entering E.

If you want to perform one of the above functions in the middle of a section, enter CTRL/Z. This interrupts normal processing and displays the following break question:

```
>;  BRK> Do you want to:
>       <RET>-Continue, R-Repeat Section, P-Pause, E-Exit[S]:
```

If you enter E in response to a break question, your responses to the current section are lost, but responses to previous sections are saved. Entering CTRL/Z in response to a break question is identical to entering E.

1.4.2 NETGEN Organization

NETGEN is organized into three main parts: NET, DEC, and PSI.

- NET displays questions relating to common components and the Communications Executive (CEX). NET contains the general routines that support both DECnet and PSI.
- DEC displays DECnet-specific questions. When combined with NET, NETGEN builds the routines that allow DECnet to run.
- PSI displays questions specific to the Packetnet System Interface (for licensed users). PSI allows you to access an X.25 Packet Switching Network (PSN).

NET, DEC, and PSI are divided into sections with a logical grouping of related questions. Figure 1-1 illustrates the organization of the NETGEN process.

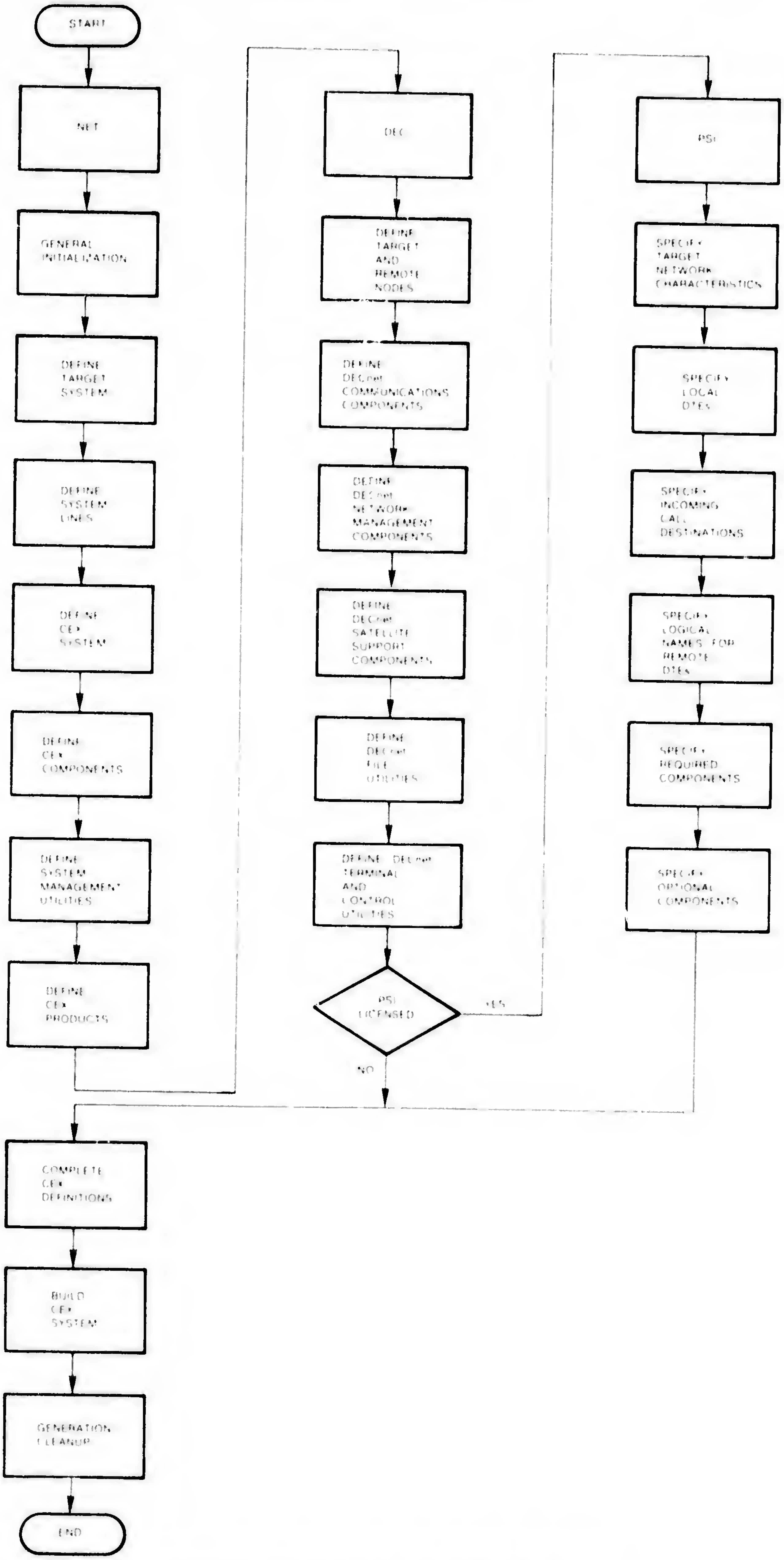
START
NET
GENERAL INITIALIZATION
DEFINE TARGET SYSTEM
DEFINE SYSTEM LINES
DEFINE CEX SYSTEM
DEFINE CEX COMPONENTS
DEFINE SYSTEM MANAGEMENT UTILITIES
DEFINE CEX PRODUCTS
DEC
DEFINE TARGET AND REMOTE NODES
DEFINE DECnet COMMUNICATIONS COMPONENTS
DEFINE DECnet NETWORK MANAGEMENT COMPONENTS
DEFINE DECnet SATELLITE SUPPORT COMPONENTS
DEFINE DECnet FILE UTILITIES
DEFINE DECnet TERMINAL AND CONTROL UTILITIES
PSI LICENSED
YES
NO
PSI
SPECIFY TARGET NETWORK CHARACTERISTICS
SPECIFY LOCAL DTEs
SPECIFY INCOMING CALL DESTINATIONS
SPECIFY LOGICAL NAMES FOR REMOTE DTEs
SPECIFY REQUIRED COMPONENTS
SPECIFY OPTIONAL COMPONENTS
COMPLETE CEX DEFINITIONS
BUILD CEX SYSTEM
GENERATION CLEANUP
END

Figure 1-1: Sections within the NETGEN Process

1.4.3 NETGEN Operating Modes and Saved Response Files

NETGEN can be run in any of the following operating modes:

- Question and Answer Mode
- Dry Run Mode
- Restore Mode
- Component Mode

The mode you select remains in effect throughout the entire generation procedure, except Question and Answer Mode.

As you answer questions, NETGEN saves your responses in a saved response file. This file is described in Section 1.4.3.5.

1.4.3.1 Question and Answer Mode — NETGEN begins in Question and Answer Mode. By answering the NETGEN questions, you define and build your system. In Question and Answer Mode, you can invoke Dry Run Mode, Restore Mode, or Component Mode.

1.4.3.2 Dry Run Mode — Dry Run Mode is a special case of Question and Answer Mode. A dry run allows you to answer all the NETGEN questions without defining or building your system; no processing is done to create a system that will run. Only the saved response file is created. This file can later be used to perform a Restore Mode generation. If you want to proceed through the NETGEN dialog without actually generating a network, invoke the Dry Run Mode.

1.4.3.3 Restore Mode — If you have performed a NETGEN in Question and Answer Mode or Dry Run Mode, your responses were saved in a saved response file. You can run NETGEN in Restore Mode to use these responses to perform a new network generation, correct inappropriate answers, or make minor changes. Restore Mode rebuilds all components.

1.4.3.4 Component Mode — After you have defined and built your system, you can add or modify specific components by invoking Component Mode. For example, if you did not include NTDEMO in your network generation, you can add it by running NETGEN in Component Mode. The questions displayed are restricted to those required for the particular component(s) you want to add or change. While Restore Mode rebuilds all components, Component Mode cannot build all components. For example, it cannot rebuild the Comm Exec or the device drivers. See Appendix C.

1.4.3.5 Saved Response Files — A saved response file is created for each part (NET, DEC, PSI) of NETGEN. NETGEN creates these various saved response files as you answer questions.

At the beginning of your second generation, NETGEN will give you the option of using your saved responses from your first NETGEN.

At the beginning of your third or any succeeding NETGEN, you will be given the option of using saved responses from your two previous generations. You can use either set of saved response files as input files for your next generation, or you can answer all the questions again. If you use one of these files, the set you choose will be saved and the other set will be deleted. If you do not use either file, the newer version will be saved and the older version will be deleted. In addition, your current answers will also be saved.

CAUTION

> Do not attempt to edit the saved response files. They are coded in a form unique to NETGEN, and any attempt to change them directly can result in a defective network generation.

1.4.4 NETGEN Output

Table 1-2 lists the disk areas where the files generated by NETGEN reside on the target disk. Group code *x* refers to the group code for NETGEN output that you specify in NET, Section 1, Question 4.00. The *dduu:* for Listing and Map files may represent the NL: device or any disk in the system. You define the devices in NET, Section 1, Question 3.00.

A description of these NETGEN files follows:

Table 1-2: Summary of NETGEN Output Files

Files	**UIC on the Target Disk**	
	DECnet-11M /-11M-Plus	**DECnet-11S**
Libraries NETLIB.MLB NETFOR.OLB	[1,1]	[1,1]
NETHLP.ULB (help file for NCP/VNP/CFE/NFT)	[1,2]	[1,2]
Command files and Work files NETINS.CMD NETREM.CMD (not for RSX-11S) NETCFE.CMD NETCFG.TXT Saved response files (GEN and RES types)	[x,1]	[x,1]
Prefix files (used to specify conditional assembly parameters) NETGEN's copy of RSXMC.MAC	[x,10]*	[x,10]
Object files, assembly and task build command files	[x,24]*	[x,24]
Listing and Map files	*dduu:*[x,34]*	*dduu:*[x,34]
Tasks and processes CETAB.MAC NETGEN's copy of RSX11M.STB or RSX11S.STB	[x,54]	[x,64]

---

* Not for pregenerated RSX-11M-PLUS end node systems

1.4.4.1 NETINS.CMD — The Network Installation Command file is the file invoked to install DECnet. Chapter 7 describes this command file.

1.4.4.2 NETREM.CMD — The Network Remove Command file is the file invoked when you want to turn the network off and remove network tasks. NETREM.CMD is generated for RSX-11M/11M-PLUS only.

1.4.4.3 NETCFE.CMD — The Network CFE Command file is an indirect command file which can be used as input to the Configuration File Editor (CFE). This file provides a record of the CETAB.MAC configuration as created by NETGEN. It can also be used as a template for making changes to CETAB.MAC. In this case, you edit the file to reflect the appropriate changes, and then use the file as an indirect command file to CFE.

1.4.4.4 NETCFG.TXT — The Network Configuration file provides information in text form on the configuration of devices, processes, and CEX products on the target system.

1.4.4.5 CETAB.MAC — The CETAB.MAC file contains the data base used to load the configuration defined for the target node. It is one of the most important outputs of NETGEN.

1.5 Post-NETGEN Considerations

Post-NETGEN considerations include: installing DECnet, testing the newly installed network, reconfiguring and tuning the network, and duplicating network generations.

1.5.1 Installing DECnet

To install DECnet, you execute the NETINS.CMD file. In many cases, this indirect command file is all that is necessary to bring up the node. For a more complete description of installing DECnet and bringing up the node, including editing the NETINS.CMD file, see Chapter 7. For a detailed explanation of the NCP commands necessary to bring up a node, see the *DECnet-RSX System Manager's Guide*.

1.5.2 Testing a Newly Installed Network

The newly installed network should be tested by running the tests described in the *DECnet-RSX Post Installation Checkout Procedures* manual.

1.5.3 Reconfiguring and Tuning after NETGEN

After the DECnet node is up and running, you can add features or change parameters to improve performance. You have three options: you can perform a new NETGEN; you can perform a Component Mode NETGEN; or, you can use one of the network utilities described in this section.

For example, to add a line to a node, you must perform a new NETGEN. To add or change an individual component such as TLK, you can perform a Component Mode NETGEN; or, you can modify certain parameters using CFE commands, NCP commands, or VNP commands.

For more information on using these utility commands, and on tuning the network, see the *DECnet-RSX System Manager's Guide*.

1.5.3.1 Configuration File Editor (CFE) Commands — CFE is used to change the permanent data base of the network; it allows you to edit the configuration file CETAB.MAC. This file retains the master copy of a wide variety of network parameters, and is read each time the network is loaded. Changes made using CFE do not take effect until the network is reloaded. CFE can change many parameters that NCP cannot change.

1.5.3.2 Network Control Program (NCP) Commands — You can modify a wide range of network parameters using NCP commands. These commands affect the running system (the volatile data base) only. The next time the network is loaded (for example, after using the NCP command SET SYSTEM), all parameters assume their previous values from the permanent data base.

1.5.3.3 Virtual Network Processor (VNP) Commands — VNP supports a subset of NCP commands that allows you to change the system image file for RSX-11M/-11S systems. Any changes you make will not become effective until the next time the system is booted. VNP is not available for RSX-11M-PLUS systems.

1.5.4 Duplicating Network Generations

You may want more than one network generation version, either exact versions or versions with slight differences between generations. The procedure for this type of generation differs from the usual Restore Mode generation.

In a Restore Mode generation, NETGEN overwrites any former generation and creates a new version. If you want to keep separate versions, the necessary procedure is as follows: keep the old generation intact at the old disk location; create a new UIC on your target disk and move the saved response files from the old UIC to the new UIC and run the NETGEN procedure in Restore Mode. When Restore Mode asks for your UIC group code, respond with your new UIC. The files you want to copy are all the files in [*xxx*,1], where *xxx* is the group code of your old generation.

If there is not sufficient space on your target disk, create a new target disk and copy the saved answers from the old target disk to the new target disk and run NETGEN in Restore Mode.

In either case, NETGEN performs a new network generation based on your former answers. As with any Restore Mode NETGEN, you can change your answers.

Chapter 2
Planning DECnet

Planning DECnet provides information for configuring your RSX system to support DECnet, identifying nodes, specifying routing parameters, and selecting DECnet components.

2.1 Configuration Requirements to Support DECnet–RSX Software

Configuring an RSX system to support DECnet requires a certain minimum configuration of software and hardware. The requirements for the host system (the system on which you are performing NETGEN) differ from the requirements for the target system (the system on which the DECnet node will run). In many cases, the same system serves in both capacities.

2.1.1 Requirements for the Host System

The host system must be either RSX-11M Version 4.1 or RSX-11M-PLUS Version 2.1, or VMS Version 4.0 when generating an RSX-11S system.

To generate the software for the target node, the host system must provide a minimum amount of available disk space. One RL01 disk drive (or larger), in addition to the disk used for the operating system, satisfies this minimum. With an RP05, RP06, or RP07 disk, one disk is usually sufficient to store the operating system and all files necessary to perform NETGEN. See Section 3.3 for PREGEN requirements.

The host system must also provide sufficient target disk capacity for tasks, maps, and listings as indicated in Table 2-1.

The total capacity required for a DECnet-only system is approximately 6,800 blocks. The total capacity for a DECnet/PSI system is approximately 7,300 blocks. If all tasks are not generated, and if maps and listings are stored on separate disks, the required capacity of the target disk is reduced correspondingly.

Table 2-1: Target Disk Capacity

Type of System	Tasks	Maps and Listings
DECnet/PSI	4,300 blocks	3,000 blocks
DECnet-only Routing or End Node	3,900 blocks	2,900 blocks
Pregenned RSX-11M-PLUS End Node	2,200 blocks	

2.1.2 Requirements for the Target System

The target system must be either RSX-11M Version 4.1, or RSX-11M-PLUS Version 2.1, or RSX-11S Version 4.1.

The target system must be a mapped system with a minimum of 16K words of memory dedicated to the DECnet software. Additional memory is required for user-written network tasks and any DECnet utilities.

The target system must have at least one communications device to satisfy the minimum hardware requirements. Table 2-2 lists the communication devices supported for DECnet and PSI.

2.2 Identifying Nodes

Each DECnet node must be identified by a unique node address and, optionally, by a unique node name.

2.2.1 Node Addresses

Node addresses are used by DECnet software to route messages. NETGEN builds a data base that contains each node address in your network. It is recommended that you specify these node addresses sequentially, beginning with 1. Sequential addressing reduces the size of data bases on routing nodes.

2.2.2 Node Names

You must assign names to remote nodes with which you want to communicate. These names must not exceed six alphanumeric characters; at least one of these characters must be alphabetic (A-Z). It is strongly recommended that you use one global set of names for all nodes in the network.

Although assigned during NETGEN, node names and addresses can be added or changed after NETGEN is completed by using the Configuration File Editor (CFE), the Network Control Program (NCP), or the Virtual Network Processor (VNP). See the *DECnet-RSX System Manager's Guide* for more information on these utilities.

Table 2–2: Supported Communications Devices

Supported for DECnet	
UNIBUS	**Q–BUS**
Asynchronous Line Support	
DL-11	DLV-11
DZ-11	DZV-11
KMC-11/DZ-11	
Synchronous Line Support	
DMP-11	DMV-11
DUP-11	DPV-11
DU-11	DUV-11
DMC-11	
DMR-11	
DV-11	
KMC-11/DUP-11	
Parallel Line Support	
PCL-11	
Ethernet Line Support	
DEUNA	DEQNA
Supported for PSI	
UNIBUS	**Q–BUS**
DUP-11	DPV-11
KMS-11	

2.3 Specifying Routing Parameters

If you are generating a routing node, you must specify the highest node address during NETGEN. Any node address exceeding the highest node address value is unreachable.

NETGEN calculates certain routing parameters for you: it assigns a maximum hop count of 10; it assigns a maximum visits count of 20; and calculates a line/circuit cost based on device type and speed. You can change these values using CFE, NCP, and VNP commands.

For more information on routing parameters, see the *Overview of DECnet-RSX* and the *Introduction to DECnet*.

2.4 Selecting DECnet Components

This section presents information to help you select optional components that perform DECnet functions and PSI functions (if you have purchased a license for PSI). If you want to perform certain functions provided by components that are always built but are not required, these components are available when you want to perform such functions. For a description of all required components, refer to Chapters 4, 5, and 6.

Table 2-3 summarizes the individual components you can select for your system. The table indicates: components that are required (RQD); components that are always built (A/B), but are not required; components that are optional (OPT); and components that are never used (N/U). To clarify exceptions for some components, notes are provided.

Required components and never used components do not require you to make a decision. However, you do need to decide whether or not you want to select certain optional components, or use components that are always built but not required. The information in this chapter should help you make these decisions.

2.4.1 Optional DECnet Components

The following paragraphs describe optional components for a DECnet RSX system. However, some of these components are selected for you as a result of another selection you have made. For example, when you specify a KDZ, and powerfail recovery is supported for your target system, KMCL is automatically generated.

2.4.1.1 KMC Microcode Loader (KMCL) — The KMC Microcode Loader (KMCL) loads all KMC devices with the proper microcode. KMC devices include KDP and KDZ. The only KMS device is KMX. KMCL is required for all RSX-11M/-11M-PLUS systems if you specify KMC or KMS devices and specify powerfail recovery support. KMCL is required on RSX-11S systems that support KMC or KMS devices.

2.4.1.2 General Microcode Loader (MLD) — The General Microcode Loader (MLD) loads devices (other than KMC or KMS) with the proper microcode. Currently, UNA is the only device that requires MLD.

2.4.1.3 Network Event Logger (EVL/EVC) — The Network Event Logger (EVL) creates records of network events: circuit state changes, node state changes, and unusual network occurrences. Records of these events are sent to the Network Event Collector. Specify event logging to facilitate tuning the network and isolating problems.

If you specify EVL, EVC is automatically included. It collects network events and sends them to the proper terminal, file, or monitor task.

2.4.1.4 Direct Line Access (DLX) — Direct Line Access (DLX) is necessary for services that must bypass normal network data channels. If you specify down-line system loading, up-line system dumping, NCP loop line/circuit testing, Console Carrier Requestor support, or user-written programs that use the DLX QIO interface, DLX is required.

2.4.1.5 Network Control Program (NCP) — The Network Control Program (NCP) is the primary program for controlling network operations and is required for RSX-11M and RSX-11M-PLUS systems. NCP is optional for RSX-11S systems. NCP allows the RSX-11S system manager to perform on-line network management functions at a local terminal, or at a remote terminal using RMT.

2.4.1.6 Network Management Device Driver (NMDRV) — If you specify event logging for an RSX-11S system, Network Management Device Driver (NMDRV) is always built. NMDRV is required for RSX-11M/-11M-PLUS systems.

2.4.1.7 Digital Communications Process (DCP) — The Digital Communications Process (DCP) is the DDCMP line protocol process that provides an error-free data path over a physical device channel. If you specify devices that require software DDCMP support, DCP is required.

2.4.1.8 Ethernet Protocol Manager (EPM) — The Ethernet Protocol Manager (EPM) is the Ethernet protocol manager that controls access to the Ethernet. If you specify devices (DEUNA, DEQNA) that support access to the Ethernet, EPM is required.

2.4.1.9 NETFOR.OLB and NETLIB.MLB — The DECnet High Level Language Library (NETFOR.OLB) allows user-supplied tasks, written in FORTRAN, COBOL, and BASIC-PLUS-2, to interface to the DECnet software. The DECnet Macro Library (NETLIB.MLB) allows user-written MACRO-11 tasks to interface to the DECnet software. If you want to code tasks using these languages, request the language libraries.

2.4.1.10 Network Information and Control Exchange (NICE) — The Network Information and Control Exchange (NICE) allows a system manager on a remote node to perform network management functions on a local node.

2.4.1.11 Event Logging Receiver (EVR) — The Event Logging Receiver (EVR) receives event notification messages from other nodes, and logs those messages to either a local terminal, a file, or a monitor task. Specify EVR to facilitate receiving events from other nodes.

2.4.1.12 Network Display Utility (NTD) — The Network Display utility (NTD) allows the user to monitor the current state of a node. NTD sends requests to the network display server task, NTDEMO, to obtain information from a local or remote RSX node. NTD requests and displays the information on the local node. NTDEMO provides the information to the NTD that requested it.

Table 2–3: Component Selection Summary for NETGEN

Component	System		
	-11M	-11M+	-11S
Communications Executive Components			
Communications Executive (CEX)	RQD	RQD	RQD
Auxiliary Process (AUX)	RQD	RQD	RQD
Device Driver Modules (DDM)	RQD	RQD	RQD
NET Communications Executive Support Components			
Network Initializer (NTINIT)	RQD	RQD	RQD
Network Loader (NTL)	RQD	RQD	N/U
KMC Microcode Loader (KMCL)	Note 1	Note 1	Note 1
General Microcode Loader (MLD)	Note 2	Note 2	Note 2
Network Event Logger (EVL)/(EVC)	OPT	OPT	OPT
Direct Line Access (DLX)	Note 3	Note 3	Note 3
NET System Management Utilities			
Network Control Program (NCP)	RQD	RQD	RQD
Network Management Device Driver (NMDRV)	Note 4	Note 4	Note 4
Network Management Volatile ACP (NMVACP)	RQD	RQD	N/U
Configuration File Editor (CFE)	A/B	A/B	A/B
Network Crash Dump Analyzer (NDA)	A/B	A/B	A/B
Virtual Network Processor (VNP)	A/B	N/U	A/B
DECnet Communications Components			
End Communication Layer and Driver (ECL)	RQD	RQD	RQD
Transport Task (XPT)	RQD	RQD	RQD
Network ACP (NETACP)	RQD	RQD	RQD
Digital Communications Process (DCP)	Note 5	Note 5	Note 5
Ethernet Protocol Manager (EPM)	Note 6	Note 6	Note 6
NETFOR.OLB and NETLIB.MLB	OPT	OPT	OPT
DECnet Network Management Support Components			
Network Information and Control Exchange (NICE)	OPT	OPT	OPT
Event Logging Receiver (EVR)	OPT	OPT	OPT
Network Display Utility (NTD)	OPT	OPT	OPT
Network Display Server (NTDEMO)	OPT	OPT	OPT
Link Watcher (LIN)	OPT	A/B	N/U
Loopback Tester (LOO)	A/B	A/B	N/U
Loopback Mirror (MIR)	A/B	A/B	A/B
Routing Control Processor (RCP)	Note 7	Note 7	Note 7
Network Verification Program (NVP)	OPT	OPT	N/U
DECnet Satellite Support Components			
Down-line System Loader (DLL)	OPT	OPT	N/U
Up-line System Dumper (DUM)	OPT	OPT	N/U
Console Carrier Requester (CCR)	OPT	OPT	N/U
Host Task Loader (HLD)	OPT	OPT	N/U
Satellite Task Loader (SLD)	N/U	N/U	OPT

(continued on next page)

Table 2-3 (cont.): Component Selection Summary for NETGEN

Component	**System**		
	-11M	**-11M+**	**-11S**
DECnet File Utilities			
Network File Transfer Utility (NFT)	OPT	OPT	N/U
File Transfer Spooler (FTS)	OPT	OPT	N/U
File Access Listener (FAL)	OPT	OPT	OPT
Command File/Batch File Submission Task (MCM)	OPT	OPT	N/U
DECnet Network Terminal and Control Utilities			
Remote Terminal Utility RMTACP (RMT/RMTACP)	OPT	OPT	OPT
Remote Terminal Host ACP HTDRV (RMHACP/HTDRV)	OPT	OPT	OPT
Network Control Terminal Task (NCT)	OPT	OPT	OPT
Terminal Communications Utility (TLK)	OPT	OPT	OPT
TLK Server Task (LSN)	OPT	OPT	OPT
Remote Task control Utility (TCL)	OPT	OPT	OPT
Required PSI Communications Components			
LAP-B Protocol Handler (LAB)	RQD	RQD	N/U
Packet Level Interface (PLI)	RQD	RQD	N/U
NW: Device Driver (NW)	RQD	RQD	N/U
Ancillary Control Processor for NW (X25ACP)	RQD	RQD	N/U
PSI Device Driver Modules SDP,SDV,KMX (PSI DDM)	RQD	RQD	N/U
Optional PSI Components			
Data Link Mapping (DLM)	Note 8	Note 8	N/U
Trace Capture Task (TRA)	OPT	OPT	N/U
Trace Interpreter Task (TRI)	OPT	OPT	N/U
X.29 Terminal Access ACP with HTDRV (X29ACP)	OPT	OPT	N/U
KMX Microcode Dumper (DUK)	OPT	OPT	N/U
KMX Microcode Dump Analyzer (KDA)	OPT	OPT	N/U
High Level Language Library (PSIFOR.OLB)	OPT	OPT	N/U
PSI Macro Library (PSI.MLB)	OPT	OPT	N/U

Notes:

1. KMCL is required for all RSX-11M-PLUS systems if you specify KMC or KMS devices and specify powerfail recovery support. KMCL is required on RSX-11S systems that support KMC or KMS devices.
2. MLD is required for all systems with devices (other than KMC or KMS devices) that need microcode to be loaded.
3. DLX is required if you specify certain operations (Section 2.4.1.4).
4. NMDRV is required for RSX-11M/-11M-PLUS. It is required for RSX-11S only if EVL is specified.
5. RCP is required only for routing nodes.
6. DCP is required for all systems if you specify devices that require software DDCMP support.
7. EPM is required for all systems if you specify Ethernet devices.
8. DLM is a required component for systems that use DECnet over a Packet Switching Network. For all other systems, DLM is never used.

2.4.1.13 Link Watcher (LIN) — The Link Watcher (LIN) determines what is to be done with an automatic service request. LIN is required to perform down-line system loading; up-line system dumping; and loop circuit testing. LIN is always built for RSX-11M-PLUS systems, is optional on RSX-11M systems and is never used for RSX-11S systems.

2.4.1.14 Network Verification Program (NVP) — The Network Verification Program (NVP) verifies accounting data for incoming connect requests against the system account file. NVP is generated for all RSX-11M and RSX-11M-PLUS systems having multi-user protection.

2.4.1.15 Down-line System Loader (DLL) — The Down-line System Loader (DLL) resides on the host system and is used to down-line load DECnet-11S systems. The host system must be directly connected by a physical link to the system to be loaded, and must be able to access the target system's image file. If you specify DLL, DLX is automatically included.

2.4.1.16 Up-line System Dumper (DUM) — The Up-line System Dumper (DUM) resides on the host system and is used to dump the memory from a DECnet-11S system up-line to a DECnet-11M or DECnet-11M-PLUS system. DUM services dump requests issued by LIN in response to a dump request message received from an adjacent node that is running RSX-11S.

2.4.1.17 Console Carrier Requester (CCR) — The Console Carrier Requester (CCR) provides access to console functions on a server-based target system. If you have Ethernet on your host system, you can specify CCR. CCR is never used for RSX-11S systems.

2.4.1.18 Host Task Loader (HLD) — The Host Task Loader (HLD) resides on a host system and is used to load task images into a target RSX-11S system's memory. HLD communicates with SLD to: down-line load a task; up-line checkpoint a task; or down-line overlay a task segment.

2.4.1.19 Satellite Task Loader (SLD) — The Satellite Task Loader (SLD) resides on an RSX-11S satellite system and is used to communicate with HLD on a host system. SLD requests loading support from HLD for RSX-11S tasks. You must specify SLD for the RSX-11S system in order to down-line load task images; up-line checkpoint a task; or down-line overlay a task segment.

2.4.1.20 Network File Transfer Utility (NFT) — The Network File Transfer utility (NFT) allows users to access files on other nodes in the network. Operations include: file transfer, file deletion, directory listing, and command/batch file submission. NFT communicates with FAL on the remote node.

2.4.1.21 File Transfer Spooler (FTS) — The File Transfer Spooler (FTS) allows users to access files on other nodes in the network. Spooled access indicates: operations may execute immediately, operations may wait for a specific time, or operations may be queued until the local or target node becomes available.

The File Transfer Spooler Dequeuer (FTSDEQ) removes requests one by one, creates a logical link to the FAL on the appropriate remote node, and executes the file transfer requests. If you specify FTS, FTSDEQ is automatically included.

2.4.1.22 File Access Listener (FAL) — The File Access Listener (FAL), the network file access server, performs file operations requested by users on other nodes. FAL operations include: transferring and concatenating files, deleting files, submitting and executing batch or command files, listing directories, and accessing sequential records.

RSX-11S FAL supplies support for unit record equipment. FAL with RMS provides RMS-11 record access capabilities as well as normal file access. This allows RMS on a remote node to perform record access to sequential, relative, and indexed files on your node.

2.4.1.23 Command File/Batch File Submission Task (MCM) — The Command File/Batch File Submission Task (MCM) allows an NFT user on a remote node to submit an indirect command file or batch file for execution on the node you are generating. MCM receives requests from the local FAL on behalf of the remote node. On RSX-11M/-11M-PLUS systems, MCM submits the file for execution by requesting the indirect command file task (...AT). MCM can submit batch files to the BATCH queue optionally for RSX-11M-PLUS only.

2.4.1.24 Remote Terminal Utility RMTACP (RMT/RMTACP) — The Remote Terminal utility RMTACP (RMT/RMTACP) resides on the user's local system, and allow the user's terminal to connect to any other RSX node in the network that supports the remote network terminal driver and ACP, HT: and RMHACP.

2.4.1.25 Remote Terminal Host ACP HTDRV (RMHACP/HTDRV) — The Remote Terminal Host ACP (RMHACP) and Host Terminal Device Driver (HTDRV) allow users on remote RSX nodes to connect to the local system.

2.4.1.26 Network Command Terminal Server Task (NCT) — The Network Command Terminal Server Task (NCT) is the network command terminal server. It allows the user's terminal to be logically connected to any other node in the network that supports network command terminals.

2.4.1.27 Remote Command Terminal Host (RTH) — The Remote Command Terminal Host (RTH) is the remote command terminal host support process. It resides on the user's local node and allows users on other nodes to logically connect their terminals to the local system through the network command terminal facility.

2.4.1.28 Terminal Communications Utility (TLK) — The Terminal Communications utility (TLK) allows you to engage in an interactive dialog with, or send single-line messages to, another user on a remote DECnet-RSX, DECnet-IAS, or DECnet-RSTS system. The remote node must have the TLK Server Task (LSN) installed.

2.4.1.29 TLK Server Task (LSN) — The TLK Server Task (Listen) allows a remote user running TLK to communicate with a terminal user on your node. LSN is automatically included for all DECnet-RSX systems on which TLK is specified. Otherwise, it is optional.

2.4.1.30 Remote Task Control Utility (TCL) — The Remote Task Control utility (TCL) is the remote task control server task. TCL allows FORTRAN programs running on other nodes to control task execution on the node where TCL is installed. TCL accepts requests to: run a task immediately or at some specified time, abort the current running of a task, or cancel requests for future execution of a task. Routines to connect to TCL and issue task requests are contained in the DECnet FORTRAN object library.

2.4.2 Optional PSI Components

The following paragraphs describe the optional components you can specify for your DECnet-RSX/PSI system.

2.4.2.1 Data Link Mapping (DLM) — Data Link Mapping (DLM) allows DECnet systems to use a Packet Switching Network (PSN) to communicate with each other. DLM performs the conversion between the protocols used by PSI and the protocols used by DECnet to allow DECnet systems to communicate over a PSN.

2.4.2.2 Trace Capture Task (TRA) — The Trace Capture Task (TRA) determines what types of packets are being transmitted and received on a line, and monitors the line's performance. TRA writes the information it has gathered to a disk file.

2.4.2.3 Trace Interpreter Task (TRI) — The Trace Interpreter Task (TRI) interprets the data in the file created by TRA and prints a file containing this information.

2.4.2.4 X.29 Terminal Access ACP with HTDRV (X29ACP) — The X.29 Ancillary Control Processor (X29ACP) task allows a user at a remote X.29 terminal connected to a Packet Assembly/Disassembly (PAD) facility to communicate with the DECnet-RSX/PSI software as if the terminal was locally connected. X29ACP is implemented as an RSX-11M/-11M-PLUS pseudodevice named HT: (which has a device driver HTDRV) and the associated ACP (X29ACP). When a remote X.29 user issues a command to connect to your system, a single unit of this HT: device is allocated to the user.

2.4.2.5 KMX Microcode Dumper (DUK) — The KMX Microcode Dumper (DUK), required if you have a KMX device, dumps the KMX microcode to a disk. See the *DECnet-RSX System Manager's Guide* for information on using this task.

2.4.2.6 KMX Microcode Dump Analyzer (KDA) — The KMX Microcode Dump Analyzer (KDA) formats and prints the KMX microcode dumped by DUK. See the *DECnet-RSX System Manager's Guide* for information on using this task.

2.4.2.7 High Level Language Library (PSIFOR.OLB) — The High Level Language Library (PSIFOR.OLB) allows you to write network tasks in FORTRAN. If you want to code tasks using FORTRAN, include this library in your target system.

2.4.2.8 PSI Macro Library (PSI.MLB) — The PSI Macro Library (PSI.MLB) allows you to write network tasks in MACRO-11. If you want to code tasks using MACRO-11, include this library in your target system.

Chapter 3
Getting Ready for NETGEN

Before running NETGEN, you must first decide how you want to lay out the partitions in your system. Partition layout determines what tasks are installed in what partitions. You must also perform a system generation (SYSGEN) to configure your system for DECnet and for your own requirements. Finally, you must perform a preparatory procedure known as PREGEN. PREGEN copies the distribution kits to a disk in the format required by NETGEN.

For the most part, there is considerable flexibility in the order in which you perform these operations. The following, however, are fixed:

1. NETGEN follows SYSGEN. If you perform a new SYSGEN, you must perform a new NETGEN.
2. The size of the Executive address space (16K or 20K words) is determined during SYSGEN, and cannot be changed without a new SYSGEN.
3. For RSX-11M and RSX-11S systems only, you must specify the starting address and the size of the partition for the Communications Executive (CEXPAR) during NETGEN. Changing the starting address requires a new NETGEN. Changing the size of CEXPAR does not require a new NETGEN, but if the size is reduced, the new size must be large enough to contain the Communications Executive.

3.1 Deciding Partition Layout

For RSX-11M/11S systems, NETGEN builds the Communications Executive for the CEXPAR partition. You must add this partition for these systems. For RSX-11M-PLUS systems, SYSGEN creates space for the Communications Executive within the RSX Executive.

With the exception of the Communications Executive, NETGEN builds all tasks to run in one partition, GEN. Depending on your system size and requirements for the network, you may need to add or modify partitions to obtain optimum performance. This section describes how you can determine the proper partition layout for your system.

3.1.1 RSX-11M-PLUS Systems

For RSX-11M-PLUS systems, it is likely that no special partitions are necessary. Memory is sufficient to run all tasks satisfactorily in GEN. If your target system is an RSX-11M-PLUS system, you can skip ahead to Section 3.1.7.

3.1.2 System Sizes

The way you configure your network depends on your system memory size. For NETGEN purposes, your system size can be classified into small, medium, and large:

Small = Under 80K words of memory

Medium = 80K to 124K words of memory

Large = Over 124K words of memory

These definitions are based on light network loading, are somewhat arbitrary, and serve only as a guide. What counts most is available memory, and this is changed both by the specific complement of network components you select and by your other software and application programs.

To determine the available room in GEN, you may need to perform a NETGEN, inspect the size of components selected, and compute the amount of space left over. Based on this computation, you may then need to reconfigure partitions.

It is possible to approximate the size of GEN by totaling the estimated size of non-GEN components and subtracting that from the memory size. Table 3-1 gives the sizes of certain key components. These sizes are merely estimates, and may vary due to individual system requirements and to future patches. Final sizes should be determined by examining the map for each individual component.

In estimating the size of GEN, you also need to know the size of other partitions as shown in Figure 3-1. You can obtain this information after SYSGEN by performing a VMR PAR command. If you need information on how to do this, see the system generation manual for your system.

3.1.3 RSX-11M Systems

For RSX-11M systems, the partition layout you select will vary depending upon the size of your system and your intended uses. In all cases, you must add the partition CEXPAR.

NETGEN builds all tasks to run in the partition GEN. However, in many cases you may want to add partitions and change the partition layout from that normally used by NETGEN. You can add partitions following SYSGEN (Section 3.2.12). The partition layout (what tasks are installed in what partitions) is defined by editing the installation command file NETINS.CMD so that tasks are installed in the desired partitions (see Section 7.1.1).

For large RSX-11M systems, use of the single partition GEN produces satisfactory performance. For small to medium size systems, you may need to add additional partitions.

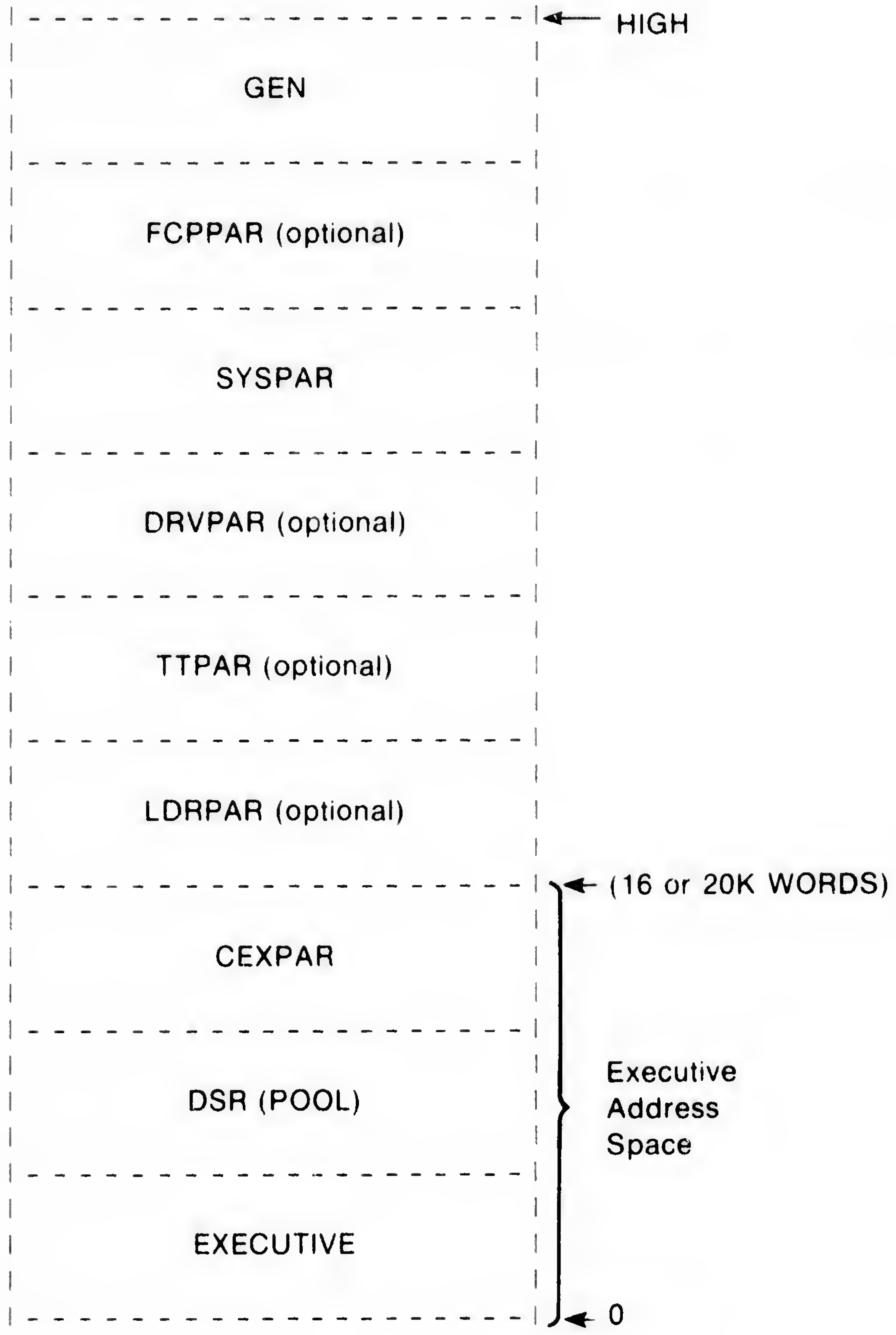

Figure 3-1: Partition Layout after SYSGEN (CEXPAR added)

Table 3-1: Approximate Sizes of Key Components

DECnet Components	Size*	Note
RSX-11M Executive	Varies	1
DSR Pool	Varies	1
Communications Executive	1K-1.5K	1
F11ACP	2K-9K	2
NETACP	4K-5K	3
NMVACP	6K	4
NTINIT	2.0K	–
NCP	12K	–
NTL	8K	–
Minimum Network	12K	5
PSI Components	**Size***	**Note**
PLI	4K	–
NW	1K	–
X25ACP	2K	–
DLM	2K	–
LAB	3K	
SDP/SDV	0.5K	–
KMX	2K	–
X29ACP	8K	–
HT:	0.75K	–
Minimum DECnet/PSI System	20K-22K	6

* Approximate number of decimal words

Notes:

1. RSX Executive, Dynamic Storage Region (DSR) pool and Communications Executive together total 16K or, if you choose the large Executive, 20K. You can change this figure somewhat depending upon your needs and resources (see Section 3.2.10). The Communications Executive varies from 1 to 1.5K, depending upon what lines and options you have selected.

2. Files 11 ACP (F11ACP) is available in four different sizes ranging from approximately 2K to 9K. If you put F11ACP in a partition with other larger components (for example, NETACP), use of the smaller two F11ACPs are not recommended. The smallest F11ACP does not provide full functionality, and the next larger is heavily overlaid. The small F11ACPs are optimized for minimum memory size, not performance, and since the memory is already allocated, a higher performance F11ACP is recommended. The third F11ACP in order of size is 5K, provides full functionality, and is moderately overlaid. (See the *RSX-11M System Generation Manual* for more information on F11ACP.)

3. NETACP comes in two sizes, 4K and approximately 5K. The smaller version does not support network command terminals and layered products (X25 Server or SNA Server).

4. NMVACP is initially built for GEN as a 4K word task. Within that size, it can handle only one user. However, when additional requests come in, it extends itself to a larger size. You can also install it with an increment to handle more users, thus eliminating the need for it to extend itself. In this case, the formula for determining the decimal word size of NMVACP is:

   4K + 170 x U

   The variable, U, is the number of additional users that NMVACP can service (it starts with a base of one). See Section 3.1.5 for more information on NMVACP.

5. The minimum network (in addition to CEX) consists of AUX, ECL, XPT, NETACP, network pool, at least one DDM, and RCP (for a full routing node). Excluding NETACP, which you may wish to load in a separate partition as shown here, these components total approximately 12K words (14K for DECnet-11M-PLUS).

6. The minimum DECnet/PSI system is 20K words (22K for DECnet-11M-PLUS). This minimum is for a node with a single DLM circuit. The minimum DECnet/PSI system consists of AUX, ECL, XPT, DLM, PLI, one DDM (KMX, SDP or SDV), LAB (only when the DDM is SDP or SDV), and DLX (required on DECnet-11M-PLUS).

There are two areas where problems may occur: applications requirements and loading.

The applications problem occurs when user applications take so much of the system resources that they downgrade network performance. In special cases it may be necessary to load network tasks in special partitions to ensure that they have available memory in which to run. Any such situation would need to be handled on an individual basis.

The loading problem may occur when using NCP to load the network in systems where memory is at a premium. This problem is discussed in Section 3.1.4.

3.1.3.1 Small RSX-11M Systems — For small systems, the partition layout shown in Figure 3-2 is recommended as a way of solving loading problems.

Here, NETACP, NMVACP, and NTINIT are installed in FCPPAR, where they run along with F11ACP, the Files 11 ACP. NETACP must be generated as checkpointable. You should size FCPPAR to accommodate the largest task in the partition. This will often be NETACP. You can arbitrarily choose a size for FCPPAR that is too large (say 7K words) and then reduce the size appropriately after NETGEN, when you know actual sizes. All other network and user tasks are installed in GEN.

This layout ensures that NMVACP and NTINIT do not tie up space in GEN that is required for loading. Putting NETACP in FCPPAR also helps reduce fragmentation.

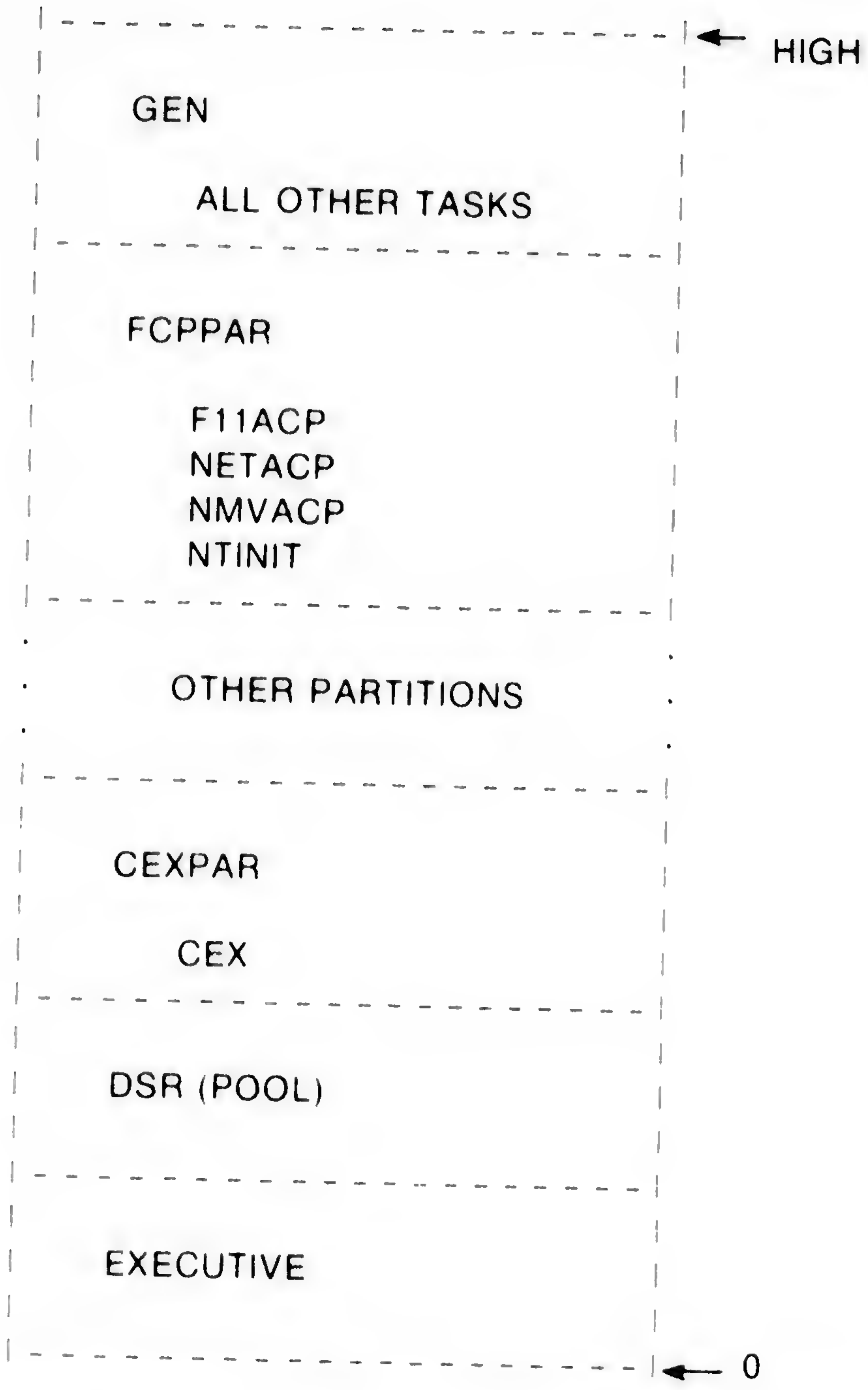

Figure 3-2: Partition Layout for Small RSX-11M Systems

NOTE

This layout provides satisfactory performance if GEN is approximately 32K or larger. For smaller systems, it is recommended that you avoid using NCP to load the network, but instead use VNP to prepare a suitable system image, and then boot the system directly. The smaller your GEN partition, the more important this recommendation. For information on VNP, see the *DECnet-RSX System Manager's Guide*.

3.1.3.2 Medium RSX-11M Systems — For medium size RSX-11M systems, the partition layout in Figure 3-3 is recommended:

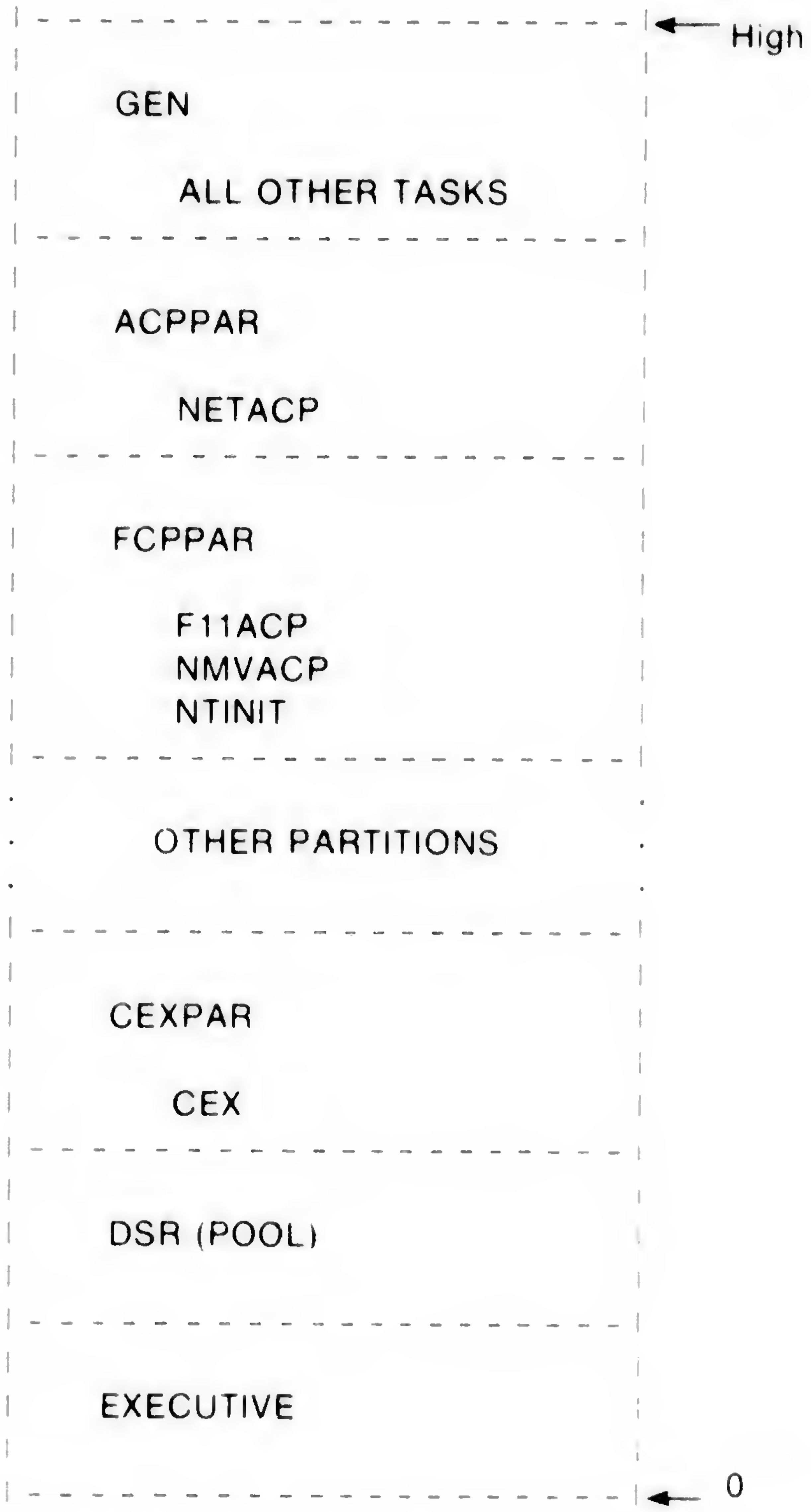

Figure 3-3: Partition Layout for Medium RSX-11M Systems

Here NETACP has been removed from the FCPPAR partition and placed in its own partition, ACPPAR. (You can name this partition anything you like: in the examples in this manual, it is ACPPAR.)

The advantage of splitting NETACP out from the FCPPAR partition in this way is that both NETACP and F11ACP can be very active tasks, and this layout avoids needlessly swapping them in and out of memory. The result is increased performance. This layout has all the other advantages of that recommended for small RSX-11M systems.

3.1.3.3 Large RSX-11M Systems — For large RSX-11M systems, performance is satisfactory when all tasks are placed in the partition GEN. However, if the system performs a great deal of network I/O, or if you wish to make NETACP non-checkpointable, the partition layout shown for medium-size RSX-11M systems (Figure 3-3) may produce higher performance.

3.1.4 RSX-11M DECnet Loading Problems

In order to understand the loading of RSX-11M DECnet, consider Figure 3-4. This figure is a version of Figure 3-1. The partitions SYSPAR, DRVPAR, TTPAR, and LDRPAR are combined under the heading Other Partitions.

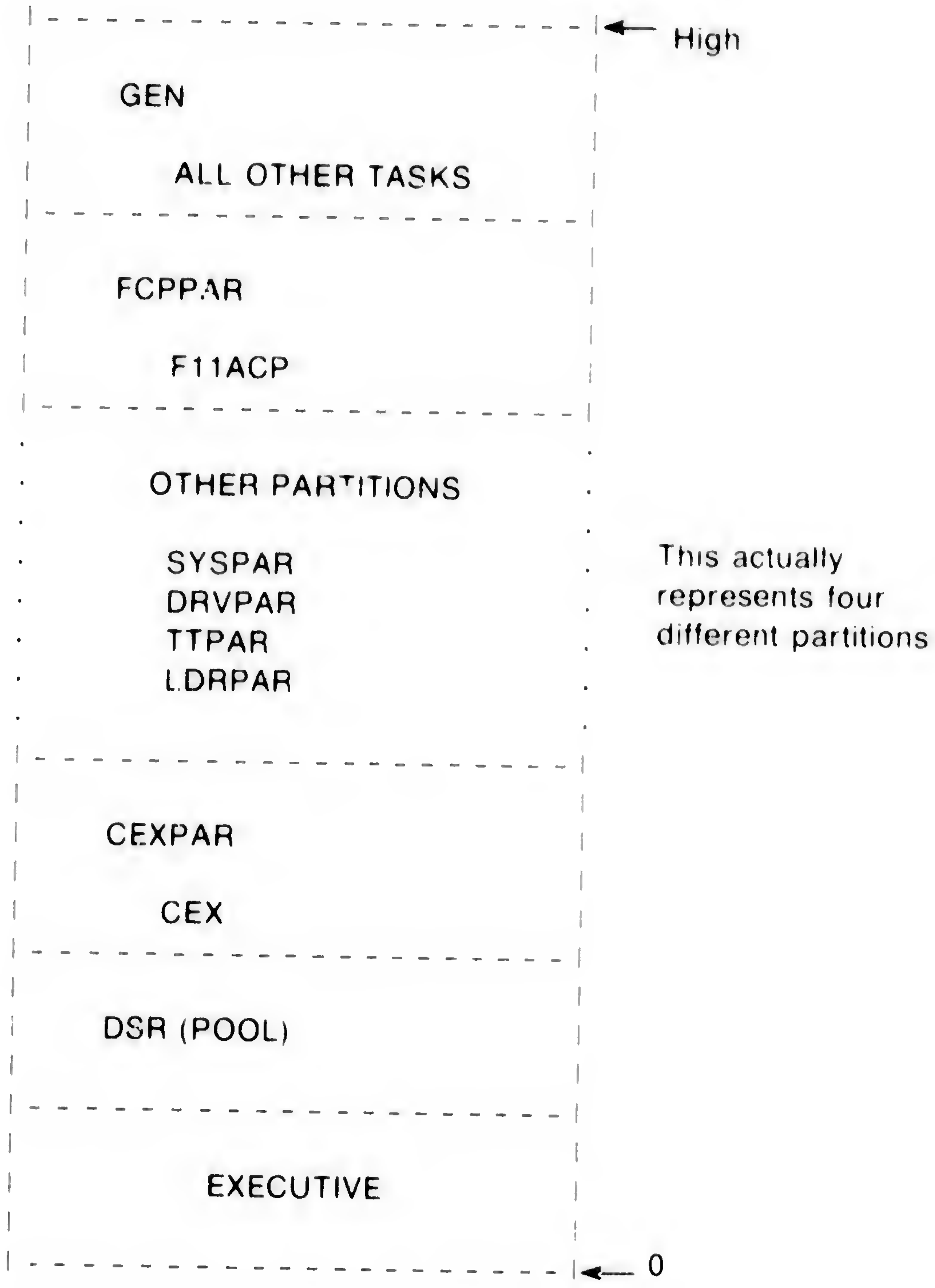

Figure 3-4: Typical Partition Layout

This example assumes that you decided to put F11ACP, the Files 11 ACP, in its own partition, FCPPAR. This is the default during SYSGEN. All DECnet tasks run in the system controlled partition GEN.

What happens when you load the network? You can load the network by using the NCP SET SYSTEM command or the VNP SET SYSTEM command.

This command initiates a series of actions. The Executive first loads NCP in GEN. NCP then makes an I/O request to NMDRV, the Network Management Driver. The driver calls NMVACP, the Network Management Volatile ACP. NMVACP in turn calls NTINIT, the Network Initialization task. After performing initialization, NTINIT calls NTL, the Network Loader, to actually load the network. Thus the entire sequence is as follows:

NCP → NMDRV → NMVACP → NTINIT → NTL → NETWORK

In this sequence, each of the tasks is loaded into GEN in turn. Each task can checkpoint the task that precedes it in the calling sequence, if it needs memory in which to run. However, because NCP has an I/O request outstanding, it cannot be checkpointed by other tasks; it remains in memory until the entire cycle is completed. Likewise, when NTL loads the network, it cannot checkpoint other tasks in order to make room for the network tasks. This is due to certain technical features of NTL.

Generally the loading procedure just described proceeds satisfactorily. However, consider the following example. Suppose the above loading procedure occurs and NCP, NMDRV, NMVACP, NTINIT, and NTL are all in memory at the same time. No checkpointing occurs because there is enough memory for all; there is even, say, 10K of memory left over. NTL then tries to load the network. The load fails because the network requires a minimum of 12K to load and there is only 10K available. NTL tries to load in the existing space, but since it is incapable of checkpointing other tasks, it fails and prints an error message.

This problem can occur only when attempting to load the network and, depending upon the size of your system, can be prevented in a variety of ways. These include:

- Removing extraneous application tasks
- Loading the network prior to booting the system, using VNP, to ensure maximum memory space.

Rearranging partition layout is another way of avoiding this loading problem (see Sections 3.1.3.1 and 3.1.3.2).

3.1.5 Special Considerations for NMVACP (RSX-11M only)

The Network Management Volatile ACP task (NMVACP) may require special treatment during NETGEN. A brief explanation of NMVACP may make this clearer.

NMVACP works in conjunction with the Network Control Program (NCP) task and the Network Management Driver (NMDRV) task to execute NCP commands. NCP scans user commands and determines what action is required. It then passes this information on to NMDRV, which performs certain preliminary processing. NMDRV, in turn, calls NMVACP to execute the NCP command. These components are described in Section 2.4.

NMVACP can also execute Network Information and Control Exchange (NICE) commands that originate from a remote system (Section 2.4.1.10).

NMVACP can handle a number of requests simultaneously; it maintains a record of the status of each request in its own buffer space. If it receives more requests than it has buffer space for, it makes a request to the RSX Executive to be checkpointed so that it may be brought back into memory as a larger task.

In large systems, this presents no particular problem. In small to medium RSX-11M systems, however, the possibility of deadlock arises. (This is one reason why the partition layouts shown in Sections 3.1.3.1 and 3.1.3.2 are recommended.) When NMVACP asks the Executive to be checkpointed, if there is not sufficient space to come in as a larger task, a deadlock may occur: the NCP command will never be executed. The problem is compounded by the fact that NCP cannot be checkpointed during the time it has an I/O request outstanding, that is, until the NCP command is completed.

To handle this problem, you may do either of the following:

1. Place NMVACP in the FCPPAR partition, along with F11ACP. This effectively provides extra memory in the partition GEN, as the memory in FCPPAR is already allocated anyway. Adding NMVACP so that it shares this partition does not require extra space. The layouts suggested for small and medium RSX-11M systems take this approach.

2. Modify the installation command file NETINS.CMD so that NMVACP is installed with a memory increment to give space for additional requests. NETINS.CMD is described in Chapter 7. The line that installs NMVACP should be modified to read:

   ```
   INS NMVACP/INC=size/CKP=NO
   ```

   Here *size* is the octal byte increase in size, and can be computed by multiplying 524 octal bytes by the number of additional simultaneous users that you wish to support. (NMVACP is originally built to handle one user.) The /CKP=NO switch eliminates the possibility of deadlock, since NMVACP can never be checkpointed.

3.1.6 RSX-11S Systems

Because RSX-11S systems are often dedicated systems, it is difficult to make specific rules for determining partition layout. You must do the following:

1. You must add the partition CEXPAR (Section 3.2.12).

2. It is recommended that you use system controlled partitions. The host system can load all required tasks into GEN with system controlled partitions and standard partition layout.

3. Determine if all desired tasks will fit in memory. Examine the maps to determine sizes. Tasks that are not required all the time may be down-line loaded. This allows several tasks to share the same partition. Refer to Section 3.1.2 to determine minimum network requirements.

3.1.7 Pre-SYSGENNED System (RSX-11M-PLUS only)

If you are doing a NETGEN for a pre-SYSGENNED RSX-11M-PLUS system, that will be used for an 11/24 processor, you must edit one symbol found in the [1,54]RSXMC.MAC file. If you are installing an RSX-11M-PLUS Pregenned end node, you do not need to edit this symbol in the RSXMC.MAC file.

This change is necessary because the processor symbol, R$$TPR, will not be properly set up to define the real processor type of your target system. Using an editor, change the symbol to read:

```
R$$TPR="24
```

This change is required prior to NETGEN; no rebuilding is required.

3.2 Performing SYSGEN

Prior to running NETGEN, you must perform a SYSGEN that prepares the RSX operating system to accommodate the DECnet software you are creating.

The following areas may require attention:

- SYSGEN support for DECnet (Section 3.2.1)
- RSX and DECnet communications devices (Section 3.2.2)
- Standard function system (RSX-11M only, Section 3.2.3)
- System controlled partitions (RSX-11M/S only, Section 3.2.4)
- Checkpoint support (RSX-11M only, Section 3.2.5)
- Support for SLD (RSX-11S only, Section 3.2.6)
- Including NETPAN (Up-line Panic Dump) (RSX-11S only, Section 3.2.7)
- Terminal driver support (Section 3.2.8)
- Queued file access requests (RSX-11M/11M-PLUS only, Section 3.2.9)
- Large or small Executive (RSX-11M/S only, Section 3.2.10)
- Editing SYSVMR.CMD (RSX-11M/S only, Section 3.2.11)
- Adding CEXPAR (RSX-11M/S only, Section 3.2.12)
- Adding other partitions (RSX-11M/S only, Section 3.2.13)

Some of the SYSGEN questions that follow may not be displayed because the support required may be automatically included as a result of a previous question. For details on running SYSGEN, see the system generation manual for your system.

3.2.1 SYSGEN Support for DECnet

To create the proper support for DECnet on the system you are generating, answer YES to the following questions in the Executive Options section of SYSGEN:

For RSX-11M/S systems:

```
>* 32. Include support for communications products (such as DECnet)? [Y/N]:
```

For RSX-11M-PLUS systems:

```
>* CE120 Do you want support for communications products (such as DECnet)? [Y/N D:N]:
```

In both cases, answering YES causes all of the essential DECnet support features to be added to the RSX operating system being generated.

3.2.2 RSX and DECnet Communications Devices

Because the RSX-11M/S/M-PLUS Executive does not need to know anything about hardware that will be used as DECnet communications devices, and because no communications device can be shared between DECnet and the Executive, do not specify any DECnet communications devices when answering questions in the Target Configuration section of SYSGEN.

However, when you generate your RSX system, you must specify how much space is to be allocated for interrupt vectors on your target system, and the space must be sufficient to include the interrupt vectors belonging to DECnet devices.

To specify properly, answer the following question with the highest vector address of devices on your system, including the DECnet communications hardware.

For RSX-11M/S systems:

```
>* 14. Highest interrupt vector [O R:0-774 D:0]::
```

For RSX-11M-PLUS systems:

```
>* CP9632  What is the highest interrupt vector address?
```

These vector addresses are available as a result of hardware installation.

For this question, do not specify the default, since the value that SYSGEN computes in this case would not take into account DECnet communication devices. In answering this question for your operating system, be sure to leave enough space for devices you have or will soon have.

For RSX-11M and RSX-11S systems, if your DECnet system includes any of the following character interrupt devices: DUP, DU, DL, DUV, DLV, or DPV, you must add 20 octal bytes to the highest interrupt vector address. For RSX-11M-PLUS systems, the 20 bytes is added automatically.

The highest interrupt vector address you can specify is 774. Specifying this value allows enough space for any devices you may choose.

3.2.3 Standard Function System (RSX-11M only)

For RSX-11M systems, Question 8. at the beginning of SYSGEN displays:

```
>* 8. Do you want a Standard Function System? [Y/N]:
```

If you answer this question YES and select the standard function system, you will automatically receive the following options (others may be included as well):

1. System controlled partitions
2. Checkpointing (but without the system checkpointing file)
3. Full duplex terminal driver (with all options)
4. Large (20K) Executive

If you choose the standard function system, you will not be able to change your maximum node address dynamically because the standard function system does not support the required system checkpointing file. The options in the list are discussed in the following sections. If you do not want all features of the standard function system, answer the question NO and specify the features you want.

3.2.4 System Controlled Partitions (RSX-11M/S only)

As a general rule, for RSX-11M/S systems, you should specify system controlled partitions. You can do so by answering YES to Question 33 of the Executive Options section of SYSGEN:

```
>* 33. System controlled partitions? [Y/N]:
```

System controlled partitions allow most network tasks to be loaded into one partition (GEN), and automatically swapped in and out of memory. The only situation in which you might not want to use system controlled partitions is in a dedicated system in which one task is loaded into each partition, thus ensuring that the task is always in memory. Each such partition should be sized exactly for the particular task. Such a system would save the small amount of memory used by the Executive to handle system controlled partitions.

3.2.5 Checkpointing Support (RSX-11M only)

The following parameters that you specify in SYSGEN will affect the performance of specific DECnet components only.

```
* 49. Checkpointing [Y/N]:
```

Answering YES enables checkpoint support. You should select checkpointing in some form.

Dynamic Checkpoint Support

If you want to be able to change the number of nodes in your network without rebuilding the routing control processor (RCP), select dynamic checkpoint allocation support. Question 50. in the Executive Options section of SYSGEN displays:

```
* 50. Checkpointing with system checkpoint file [Y/N]:
```

Answer YES if you want dynamic checkpoint support. If you select dynamic checkpointing support and you execute the CFE DEFINE EXECUTOR MAXIMUM NODE ADDRESS command, RCP will automatically extend itself to the required size when it is loaded. See the *DECnet-RSX System Manager's Guide* for more information on the CFE command shown here.

3.2.6 Support for SLD (RSX-11S only)

If you wish to use the Satellite Task Loader (SLD) to perform down-line task loading on RSX-11S systems, you must edit the RSXMC.MAC file to include two symbols, D$$ISK and C$$CKP. D$$ISK includes task loader support, and C$$CKP creates checkpointing support.

The procedure is as follows. In SYSGEN Phase I, Question 1 in the section labeled "Create Executive build files" displays:

```
* 1. Do you wish to edit any of the Executive files? [Y/N]:
```

Answer this question YES. SYSGEN then pauses to allow you to edit any file using the editor of your choice. Edit the RSXMC.MAC file on UIC [11,10]. First search for the symbol A$$CPS. Then below that symbol, add the following symbols to the RSXMC.MAC file:

```
C$$CKP     ;CHECKPOINTING SUPPORT
D$$ISK     ;TASK LOADER SUPPORT
```

3.2.7 Including NETPAN (Up-line Panic Dump) (RSX-11S only)

If you are including NETPAN in the system, you should also define the symbol R$$BOT in the RSXMC.MAC file. NETPAN, the Up-line Panic Dump routine, allows a DECnet-11S system to dump the contents of its memory to an adjacent DECnet-11M/-11M-PLUS system in the event of a system crash. For information on the SYSGEN steps required to include NETPAN, see Appendix B.

3.2.8 Terminal Driver Support

TLK, RMT, and X.29 will provide different capabilities depending on the options selected for the terminal driver. The following section discusses these options.

Support for TLK (RSX-11M/S only)

TLK is the Terminal Communications utility which allows you to exchange messages between terminals at different nodes in a network. There are two modes of TLK: dialog mode and single message mode.

Question 1 of the Terminal Driver Options section of SYSGEN displays:

```
* 1. Terminal driver desired (A/B/C/D, * prints table) [S]:
```

If you enter an asterisk (*), SYSGEN prints the following table:

```
Terminal drivers:  A- Tailorable half duplex
                   B- Tailored half duplex (user oriented)
                   C- Full duplex
                   D- Baseline half duplex
```

Answering A, B, or C produces satisfactory results. (If you are a PSI X.29 user, however, see Support for PSI X.29, below.) Answering B automatically provides the necessary support for both versions of TLK. If you answer A or C, you must select the specific driver features desired. In either case (A or C), if you want either mode of TLK, you must answer YES to the following question:

```
* 8. Breakthrough write? [Y/N]:
```

Additionally, if you want the dialog mode of TLK, you must answer YES to the following question:

```
* 17. Read after prompt? [Y/N]:
```

If you want the video dialog mode of TLK, and if you answered A or C to Question 1. above, you must also answer YES to the following question in the same section of SYSGEN:

```
* 6. Unsolicited input character AST? [Y/N]:
```

Asynchronous System Traps (ASTs) are software interrupts. Answering this question YES allows your terminal to process characters entered on the keyboard at the same time characters are being printed on the screen. Support for unsolicited input character ASTs is automatically included if you answer B to Question 1. For more information on TLK, see the *DECnet-RSX Guide to User Utilities.*

Support for Remote Terminal (RMT)

The Remote Terminal (RMT) utility works with any of the terminal drivers noted under TLK. However, it is recommended that you choose A, B, or C. Performance varies depending upon which terminal drivers are installed on the source and the host nodes. For more information, see the discussion of RMT in the *DECnet-RSX Guide to User Utilities.*

Support for PSI X.29 (RSX-11M only)

If you want support for PSI, you need to answer C to the terminal driver question (Question 1) noted under Support for TLK above. PSI's X29ACP requires the full duplex driver.

Also, respond YES to Question 12.:

```
>* 12. Set multiple characteristics? [Y/N]:
```

The result is to create MCR support for SET commands relating to terminals, such as:

```
SET /VT100=TI:.
```

3.2.9 Queued File Access Requests (RSX-11M/11M-PLUS)

FTS allows file access requests (file transfers, etc.) to be queued and processed in sequence. If you want FTS, the RSX-11M/M-PLUS Queue Manager (QMG) must be built during SYSGEN.

For RSX-11M systems, the following question in the Executive Options section of SYSGEN must be answered YES.

```
>* 35.  Queue Manager and queued print spooler? [Y/N]:
```

For RSX-11M-PLUS systems, answer YES to the following question:

```
>* CE180  Do you want to include the Queue Manager? [Y/N D:N]:
```

For more information on FTS, see the *DECnet-RSX Guide to User Utilities.*

3.2.10 Large or Small Executive (RSX-11M/S only)

The RSX Executive for an RSX-11M or RSX-11S system can be built in either 16K or 20K of address space. In the Executive Option section of Phase 1, SYSGEN displays the following question:

```
>* 22.  Large (20K) Executive? [Y/N]:
```

If you answer NO to this question you will get the 16K Executive.

Your response to this question determines the amount of Executive address space allocated to the Executive plus DSR (pool). The size of the Executive itself is determined solely by your answers to questions about Executive options. The space left over is allocated to pool. This allocation, however, can be altered by editing the SYSVMR.CMD file (see Section 3.2.11).

Deciding which size Executive to choose depends upon your type of system, its size, and its intended use. In general, for medium to large RSX-11M systems you want the 20K Executive because the extra pool is useful, and you have enough memory so that the 4K allocated to pool does not significantly affect your ability to run tasks.

On small RSX-11M and RSX-11S systems, you need to make a tradeoff decision between need for pool and need for extra task space; you may decide to use the smaller Executive, since task space is often at a greater premium than pool.

These tradeoff decisions depend upon network loading, types of programs being run, and user program load. For example, if an RSX-11M node is being used only as a routing node, all of pool may not be used. Therefore performance is improved by using the 16K Executive, since there is less checkpointing of network tasks. You can also reduce the Executive-plus-pool size to less than 16K (Section 3.2.12).

3.2.11 Editing SYSVMR.CMD (RSX-11M/S only)

For RSX-11M and RSX-11S systems, it is necessary to add at least one partition, CEXPAR, to the system in order to run DECnet. For medium size RSX-11M systems, you may also want to add another partition as well (see Section 3.1.3.2). These partitions are added by editing the SYSVMR.CMD command file.

In Phase 2 of SYSGEN, VMR Question 1 displays:

```
>* 1.  Edit SYSVMR.CMD? [Y/N]:
```

Answer this YES, and SYSGEN will then pause and allow you to edit the file. If you answer NO or press RET, you can edit the file later.

SYSVMR.CMD is an indirect command file used as input to the Virtual Monitor Console Routine (VMR) utility. VMR allows you to change the system image file used to boot the operating system. VMR commands are similar in format to those of MCR; the SYSVMR.CMD file contains commands such as SET, LOA, and INS. When VMR executes these commands, it simulates their effect on the system image file. Thus when the system is booted, the commands have effectively been performed. (For more information on VMR, see the SYSGEN manual for your system. Also, the *RSX-11M/M-PLUS System Management Guide* contains reference information on VMR.)

The SYSVMR.CMD file is found on UIC [1,54] for RSX-11M. For RSX-11S systems, you need to create a copy on UIC [1,64] (see the following section). The first line of the file is the name of the system image file which SYSVMR.CMD modifies. Following that are SET commands that define partitions.

3.2.12 Adding CEXPAR (RSX-11M/S only)

For RSX-11M and RSX-11S systems, the necessary partition (CEXPAR) is incorporated by adding a SET /MAIN=CEXPAR line to the SYSVMR.CMD file.

The beginning of the SYSVMR.CMD file from an RSX-11M system may look like the following. (A sample RSX-11S SYSVMR.CMD file, with the appropriate lines to create CEXPAR, is shown at the end of this section.)

```
RSX11M
SET /POOL=*
SET /MAIN=EXCOM1:*:200:COM
INS EXCOM1
SET /MAIN=EXCOM2:*:200:COM
INS EXCOM2
SET /MAIN=LDRPAR:*:26:TASK
INS LDR
FIX LDR...
SET /MAIN=TTPAR:*:400:TASK
LOA TT:
SET /MAIN=DRVPAR:*:*:SYS
```

You should add a line to the SYSVMR.CMD file between the SET /POOL=* command and the SET /MAIN command for the first partition shown. To reflect the base address at which CEXPAR loads, change the value of the SET /POOL=* line. The effect of these changes is that CEXPAR loads immediately above the RSX Executive and pool. The format for the two lines is:

```
SET /POOL=base address
SET /MAIN=CEXPAR:*:size:COM
```

The asterisk (*) here means, load at the next available location. The word COM signifies that this is a common block partition.

If you specified the *default* values given in NET Section 4, Questions 1.00 and 1.01, use the base address values and size values given in Table 3-2. If you did not specify the *default* values, make sure the values you use coincide with your response to Questions 1.00 and 1.01.

These sizes fill the Executive address space, using 20K or 16K words. The size of 43 or 50 (that is, 4300 or 5000 octal bytes) is an estimate of CEX size, which varies somewhat depending upon your configuration. Extra space is not wasted, but is used for Communications Executive pool.

Table 3-2: CEXPAR Base Addresses and Sizes

Executive (in words)	CEX Size*	Base Address**	Par Size**
20K	large	1130	50
20K	small	1135	43
16K	large	730	50
16K	small	735	43

---

* CEX size is determined as follows: CEX is automatically generated in one of two sizes by NETGEN. For a DECnet only (that is, non-DECnet/PSI) system with only one line, NETGEN generates a small CEX. In all other cases, NETGEN generates a large CEX.

** The base address and size are shown in octal bytes. Note that the final two digits of the address and size are omitted in this table and in the discussion that follows, because that is the convention employed by VMR. Thus an octal byte address of 112000 is expressed as 1120. (In NETGEN, however, you must express the last 2 digits.)

For RSX-11M systems, these values are usually adequate. For very small RSX-11S systems, or systems in which there is a strong need for DSR pool, you may want to make the size of CEXPAR even smaller. To do this specify a higher base address and a smaller size for the CEXPAR partition (NET Section 4 Questions 1.00 and 1.01). You can run NETGEN in Restore Mode to simplify this procedure.

In addition, for both RSX-11M and RSX-11S systems, you may choose to load CEXPAR at a lower base address. This causes other partitions to be lowered correspondingly. Loading other partitions below the defined end of the Executive (16K or 20K) in this way is appropriate for single-user systems or dedicated applications where a limited amount of pool is sufficient.

For an RSX-11S system, you must create a SYSVMR.CMD file on UIC [1,64]. The following is a sample.

```
RSX11S
SET /POOL=730
SET /MAIN=CEXPAR:*:50:COM
SET /MAIN=TTPAR:*:400:TASK
SET /MAIN=SYSPAR:*:40:TASK
SET /MAIN=MCRPAR:*:140:TASK
SET /MAIN=RSDV52:*:400:TASK
SET /MAIN=GEN:*:*:SYS
LOA TT:
INS TKN/FIX=YES
INS BASMCR/FIX=YES
PAR
TAS
```

After invoking VMR, you should still enter the time after running SYSVMR.CMD as an indirect command file. The command PAR prints out a list of partitions, and the command TAS prints out a list of tasks.

3.2.13 Adding Other Partitions (RSX-11M/S only)

You may have chosen, after reading the information provided in Section 3.1.3.2, to put NETACP in its own partition, here called ACPPAR. To create the ACPPAR partition, edit SYSVMR.CMD and insert a SET /MAIN command just before the SET /MAIN command that defines the partition GEN. The line to insert takes the following form:

```
SET /MAIN:ACPPAR:*:size:[SYS]
                        [TASK]
```

Here the asterisk (*) indicates that ACPPAR is loaded in the next available space, and **size** specifies the size of the largest task to occupy the partition. SYS indicates that this is a system controlled partition. If you did not select system controlled partitions, use the word TASK instead.

A size of 270 is generally adequate (again, the final two octal digits are implied).

3.3 PREGEN

PREGEN is a preliminary procedure you may have to perform before generating a network. It takes your required and optional distribution media and merges them, so they can be used by the NETGEN procedure. PREGEN can include the following distribution kits (disks or magnetic tapes):

- Network kit
- DECnet kit
- PSI kit (optional)

Depending on the type of media you have purchased and the type of system you are generating, you may or may not have to perform the PREGEN procedure.

If you have purchased an RL02, RK06, or RK07 distribution kit and you are generating a DECnet-only system, PREGEN is not required. Your distribution kit contains all the files you will need to run NETGEN (1 disk). In addition, if you have purchased an RL02, RK06, or RK07 distribution kit for a combined DECnet/PSI system but want to generate a DECnet only system, PREGEN is not required.

If you do not have to perform PREGEN, you should make a copy of your distribution media and run the NETGEN procedure from this copy. If you do not have to perform PREGEN, you can skip ahead to Chapter 4.

PREGEN is required if the following conditions apply:

- You have purchased a magnetic tape distribution kit.
- You have purchased an RL01 distribution kit.
- You are generating a combined DECnet and PSI system.
- You are generating a PSI-only system.

Each kit contains command files and object files. The command files become the corresponding parts of NETGEN: NET, DEC, and PSI. The object files build the appropriate NET, DEC, or PSI components.

PREGEN copies the command files from each distribution kit to the NETGEN disk. This disk becomes the input to NETGEN, and allows NETGEN, once started, to display the NETGEN questions. PREGEN copies the files listed in Table 3-3.

Table 3-3: PREGEN Files

File	Contents
NETGEN command files	Command files from all available kits
Network Object files	Object files for the NET procedure of NETGEN
DECnet object files	Object files for the DEC procedure of NETGEN
PSI object files	Object files for the PSI procedure of NETGEN

PREGEN can be run for either a standard system, or for a small dual-disk system. A standard PREGEN is performed for systems other than small dual-disk systems. A small dual-disk PREGEN is performed for a small dual-disk system. A small dual-disk system has only two small disk drives (drives such as RL01s, RL02s, RK06s, or RK07s), one of which serves as a system disk. A standard PREGEN and a small dual-disk PREGEN are started the same way.

3.3.1 Overview of Standard PREGEN Operation

For a standard system, PREGEN first asks if you want to see the PREGEN notes, and if you do, displays them. PREGEN then asks if you are running on a small dual-disk system. If you answer YES, you get the small dual-disk PREGEN. If you answer NO, you get the standard PREGEN. The remainder of PREGEN is repeated once each for the Network, DECnet, and (optionally) PSI distribution kits. For each pass through the procedure, the following occurs:

- PREGEN asks if you want to copy the distribution kit. It does not ask you this question for the first kit, because you must copy the Network distribution kit. Answer the question YES for each distribution kit you have.
- PREGEN then displays several questions about the distribution kit disk or tape.
- PREGEN asks for the device where the NETGEN disk is loaded and then asks several related questions.
- PREGEN copies the command files from the distribution kit to the NETGEN disk.

- PREGEN asks if you also want to place the object files on the NETGEN disk (Question 7.00). If you answer YES, PREGEN copies the object files and then skips ahead to the next pass.
- If you answer NO to Question 7.00, PREGEN asks you to specify the disk to which the object files should be moved. PREGEN then asks several questions about the object disk.
- PREGEN copies the object files to the object disk, and then goes on to the next pass.

3.3.2 Overview of Small Dual-Disk PREGEN Operation

There is not enough space on a small dual-disk system to copy all of the object files from the distribution kits to other disks. Each kit is used for the build phase of NETGEN. Mount each distribution kit during PREGEN, then mount each kit again during NETGEN.

For a small dual-disk system, PREGEN first asks if you want to see the PREGEN notes, and if you do, displays them. PREGEN then asks if you are running on a small dual-disk system. If you answer YES, you get the small dual-disk PREGEN. If you answer NO, you get the standard PREGEN. The following is repeated once each for the Network, DECnet, and (optionally) PSI distribution kits. For each pass through the procedure, the following occurs:

- PREGEN asks if you want to copy the distribution kit command files. It does not ask you this question for the first kit, because you must copy the Network distribution kit. Answer the question YES for each distribution kit you have.
- PREGEN then displays several questions about the distribution kit disk.
- PREGEN copies the command files for each distribution kit to the system disk.

When the above process is done, PREGEN asks for the device where the NETGEN disk is loaded and then asks several related questions. Finally, PREGEN copies the command files from the system disk to the NETGEN disk, and then deletes the command files from the system disk.

3.3.3 Copying Distribution Media to Disks

If you have purchased distribution media in magtape form, you need the following:

Drives	**Media**
1 System disk drive	System disk
1 Magnetic tape drive	NET kit DEC kit PSI kit (optional)
1 Free disk drive	1 Free disk (NETGEN disk) or multiple disks

You cannot use tape distribution media for a small dual-disk PREGEN.

If you have purchased distribution media in disk form and you are on a system that is not a small dual-disk system, you need the following for a standard PREGEN:

Drives	**Disks**
1 System disk drive	System disk
1 Free disk drive	NET kit DEC kit PSI kit (optional)
1 Free disk drive	1 Free disk (NETGEN disk) or multiple disks

If you have purchased distribution media in disk form and you are on a system that is a small dual-disk system, you need the following for a small dual-disk PREGEN:

Drives	**Disks**
1 System disk drive	System disk
1 Free disk drive	NET kit DEC kit PSI kit (optional) 1 Free disk (NETGEN disk)

With any output disk (except those with very large capacity such as RP05 or RP06), it is recommended that PREGEN initialize the disk to ensure maximum capacity is available for the distribution kit files.

If you want PREGEN to initialize the disk, do not mount it but make sure you run the Bad Block (BAD) utility on any disks initialized by PREGEN before running PREGEN. If you do not want PREGEN to initialize the disk, it does not matter whether you mount it or not.

3.3.4 Starting PREGEN

Depending upon the type of distribution kit you purchased, use one of the two procedures described here to start PREGEN.

3.3.4.1 Disk Distribution Media — For distribution kits in the form of disks, use the following procedure to start PREGEN:

1. To allocate the disk drive for the NETKIT (network kit) disk, enter:

   ```
   >ALL ddx:
   ```

2. To mount the NETKIT disk, enter:

   ```
   >MOU ddx:NETKIT
   ```

3. To create the UIC [137,10] on a disk (*tdu:*) that will be available throughout PREGEN, if it does not already exist, enter:

   ```
   >UFD tdu:[137,10]
   ```

4. To set the UIC to [137,10], enter:

   ```
   >SET /UIC=[137,10]
   ```

5. Using PIP, to copy the PREGEN command file from the NETKIT disk (*ddx:*) to the UIC [137,10] that you created on *tdu:*, enter:

   ```
   >PIP tdu:/NV=ddx:PREGEN.CMD
   ```

6. To allocate all other disk drives to be used, enter:

   ```
   >ALL ddu:
   ```

7. To execute PREGEN, enter:

   ```
   >@tdu:PREGEN
   ```

3.3.4.2 Magnetic Tape Distribution Media — For distribution kits in the form of magnetic tapes, use the following procedure:

1. To allocate the NETKIT (network kit) tape drive, enter:

   ```
   >ALL mmu:
   ```

2. To allocate all other drives to be used, enter:

   ```
   >ALL ddx
   ```

3. To mount the NETKIT, enter:

   ```
   >MOU mmu:/FOREIGN
   ```

4. To create the UIC [137,10] on an available disk (*tdu:*) that will be available throughout PREGEN, if it does not already exist, enter:

   ```
   >UFD tdu:[137,10]
   ```

5. To set the UIC to [137,10], enter:

   ```
   >SET /UIC=[137,10]
   ```

6. To copy the PREGEN command file from the NETKIT using FLX, enter:

   ```
   >FLX tdu:/UI=mmu:[137,10]PREGEN.CMD/RW[/DNS:n]
   ```

7. To execute PREGEN, enter:

   ```
   >@tdu:PREGEN
   ```

The *n* at the end of the line beginning with FLX should be either 800 or 1600, depending on which density tape you are using. The default is 800, so if your tape density is 800, you can omit the /DNS:*n*. The disk *tdu:* must be available throughout PREGEN.

3.3.5 Understanding the PREGEN Dialog

The following sections present the PREGEN dialog. Your response to Question 2.00 determines whether you will run a standard PREGEN or a small dual-disk PREGEN.

```
>; ========================    ===============================
>; PREGEN - RSX-11M/S/M-PLUS CEX System Pre-Generation Procedure
>;          Started at time on date
>; ============================================================
>;
>; Copyright (C) 1983 by
>; Digital Equipment Corporation, Maynard, Mass.
>* 01.00 Do you wish to see the PREGEN notes? [Y/N]:
>;
>: Answer this question YES if you are not familiar with running PREGEN.
>;
>; . Before starting PREGEN, you must have allocated all required disk
>;   and/or tape drives which are not public devices.
>;
>; . If an output disk is already mounted, PREGEN will use the disk as
>;   is. If it is not mounted, PREGEN will provide the option of
>;   mounting the disk either with or without re-initializing it.
>;
>; . The following tasks may be required:
>;
>;   PIP (if using disk distribution media).
>;   FLX (if using magtape distribution media).
>;   UFD (if any necessary UICs do not already exist).
>;
>; . If you are running on a system with only one free disk drive (other
>;   than the drive used for your system disk), and you are using disk
>;   distribution media, your system disk must have at least 5000 free
>;   blocks.
>;
>; . To obtain help for any question, type <ESC>. To exit or to
>;   temporarily stop PREGEN execution, type <CTRL/Z>.
>;
>; . The disk in ddu: must remain mounted throughout the entire PREGEN
>;   procedure.
>;
>; . For questions that can be answered YES or NO, the default is NO
>;   unless otherwise specified. For questions with defaults, the
>;   default is produced by pressing a carriage return <RET> in
>;   response to the question.
```

In the notes, *ddu:* refers to the disk drive from which you are running this procedure. If PIP, FLX, and UFD are not installed, PREGEN installs them and displays a message to indicate this.

(continued on next page)

```
>* 02.00 Are you running on a small dual-disk system [Y/N]:
>;
>; A small dual-disk system is one which has only two small disk drives,
>; such as RL01s, RL02s, RK06s or RK07s.
>;
>; If you are running on a small dual-disk system, answer this question
>; YES.
>;
>; If your system has two free disk drives (other than the drive used for
>; your system disk), or if you are using magtape distribution media,
>; answer this question NO.
>;
>; If you are running on a dual-disk system which has a large system disk
>; with at least 25000 free blocks, you may answer either NO or YES. If
>; you answer NO, all network generation command files and object files
>; will be placed on your system disk. If you answer YES, the network
>; generation command files will be placed on some disk other than your
>; system disk (the object files will remain on the distribution kits,
>; which must be swapped with the NETGEN disk during the network
>; generation).
```

For a DECnet-only system (a DECnet-RSX system without PSI), 20000 free blocks is sufficient.

```
>; If you answer YES, approximately 5000 blocks of free space are
>; required for temporary storage on your system disk. UIC [137,10] will
>; be used for this purpose, and should not be used for user files. If
>; you do not have 5000 free blocks, create a copy of your system disk
>; and delete files such as maps, listings, command files, sources (other
>; than RSXMC.MAC), and unnecessary task images.
```

For a DECnet-only system, 3000 free blocks is sufficient.

```
>; In addition, if you answer YES, your distribution kit disks will
>; contain the object files used during the task build phase of NETGEN,
>; and must be loaded as appropriate objects are needed to build network
>; tasks. For this reason, it is suggested that you back up the
>; distribution kits prior to performing the generation.
```

NOTE

If you answer NO to Question 2.00, the subsequent dialog appears in Section 3.3.6. If you answer YES to Question 2.00, the subsequent dialog appears in Section 3.3.7.

3.3.6 Standard PREGEN

PREGEN displays Question 3.00 for all kits except NETKIT because NETKIT is always required.

```
* 03.00 Copy the DECnet distribution kit? [Y/N]:
;
; Answer this question YES if you have this distribution kit, and you
; will be generating a DECnet network.
;
* 04.00 Where is the network distribution kit loaded? [S]:
;
; Specify the disk or tape drive where the distribution kit is or will
; be loaded (e.g. DK1 or MM0).
;
* 04.01 Is the disk (or tape) already loaded in ddu:? [Y/N]:
;
; Answer this question YES when the distribution kit is loaded and ready
; to be mounted. PREGEN will actually mount the disk (or tape).
;
* 04.02 Is the tape 1600 BPI? [Y/N]:
;
; Answer this question YES if the distribution tape is encoded with 1600
; BPI (bits per inch). Answer NO if the tape is 800 BPI.
;
* 05.00 Where is the NETGEN disk loaded [S]:
;
; The NETGEN disk, created by PREGEN, is the primary disk used during a
; network generation. It will contain all command files, from all
; distribution kits, which are necessary during the question/answer
; phase of the generation.
;
; If there is enough room on this disk, the data files, object files,
; and task images which will be used during the task build phase of the
; generation may also be placed on this disk.
;
; Specify the disk drive where the NETGEN disk is or will be loaded
; (e.g. DM0).
;
* 05.01 Is the disk already loaded in ddu: (netgen disk drive)? [Y/N]:
;
; Answer this question YES when the NETGEN disk is loaded and ready to
; be mounted. PREGEN will actually mount the disk if it is not already
; mounted.
;
* 06.00 Should the NETGEN disk be initialized? [Y/N]:
;
; Answer this question YES if the disk should be initialized. This will
; place an initial file system on the disk, and destroy any files that
; may have been on the disk previously. If the disk has already been
; properly initialized, answer NO.
;
; If you answer YES, the disk will be given the label "NETGEN".
```

(continued on next page)

PREGEN displays Question 6.00 only if the NETGEN disk has not already been mounted; and displays the following statement if you answer YES to Question 6.00.

```
; The disk will be initialized with the label "NETGEN".
;
* 06.01 What is the label used to mount the NETGEN disk [S]:
;
; Specify the label PREGEN is to use when mounting the previously
; initialized NETGEN disk. This should be from 0 to 12 alphanumeric
; characters.
```

PREGEN displays Question 6.01 if you answer NO to Question 6.00. At this point, the command files are copied to the NETGEN disk.

```
* 07.00 Should the network object files be moved to the NETGEN disk?[Y/N]:
;
; The object files are those files which are used by NETGEN only during
; the build phase, when all of the generation questions have been
; answered, and the processes and tasks are going to be built.
;
; If the object files are on the NETGEN disk, they are immediately
; available for use by NETGEN. If they are on a separate Object disk,
; NETGEN will have to wait until that disk is ready to be mounted
; before it can build the tasks for that product. For systems with a
; limited number of disk drives, this may also involve dismounting and
; unloading some other disk (such as the NETGEN disk).
;
; If the NETGEN disk has enough free space, you may wish to move all of
; the object files to the NETGEN disk in order to minimize the time
; needed to perform a network generation. If so, answer this question
; YES. If there is not enough free space, or if you are not sure,
; answer NO.
;
; The number of free blocks on the NETGEN disk is:
;
; free block information
```

For example: DM0: has 24080. blocks free, 3046. blocks used out of 27126. Largest contiguous space = 11160. blocks 1652. file headers are free, 16. headers used out of 1668. During this time, PREGEN executes a PIP *ddu:*/FR command, where *ddu*: is the NETGEN disk drive.

```
; The approximate number of blocks needed for the network objects is:
;
; number
```

(continued on next page)

If you answer Question 7.00 YES, PREGEN copies the files to the NETGEN disk and skips over the remaining questions in this pass. If you answer NO, PREGEN displays the remaining questions.

For DECnet-only systems (RSX-DECnet without PSI), all initialized disks have sufficient capacity to hold all of the object files. For DECnet/PSI systems, all initialized disks have sufficient capacity (except RL01).

When performing an RL01 PREGEN for a DECnet/PSI system, it is recommended that you place the Network object file on the NETGEN disk, and place the DECnet and PSI object files on a separate disk.

```
>* 08.00 Where is the network Object disk loaded? [S]:
>;
>; This Object disk, created by PREGEN, will contain all object, data and
>; task files which are necessary during the phase of the network
>; generation which builds the network product.
>;
>; This Object disk may be a separate disk, or it may be a disk which
>; already holds other object files (or any other files).
>;
>; Specify the disk drive where the Object disk is or will be loaded
>; (e.g. DM0).
>;
>* 08.01 Is the disk already loaded in ddu:?[Y/N]:
>;
>; Answer this question YES when the Object disk is loaded and ready to
>; be mounted. PREGEN will actually mount the disk if it is not already
>; mounted.
```

In Question 8.01,*ddu*: refers to the Object disk drive specified in Question 8.00.

```
>* 09.00 Should the Object disk be initialized? [Y/N]:
>;
>; Answer this question YES if the disk should be initialized. This will
>; place an initial file system on the disk, and destroy any files that
>; may have been on the disk previously. If the disk has already been
>; properly initialized, answer NO.
>;
>; If you answer YES, the disk will be given the label "netobj'.
```

PREGEN displays Question 9.00 only if the disk has not already been mounted. In successive passes, PREGEN replaces *netobj* with *decobj* and *psiobj*.

PREGEN displays the following statement if you answer Question 9.00 YES.

(continued on next page)

```
>; The disk will be initialized with the label "netobj".
>;
>* 09.01 What is the label used to mount the Object disk? [S]:
>;
>; Specify the label PREGEN is to use when mounting the previously
>; initialized Object disk. This should be from 0 to 12 alphanumeric
>; characters.
```

PREGEN displays Question 9.01 if you answer Question 9.00 NO.

At this point, the object files are copied to the Object disk. This completes one pass of PREGEN. If all distribution kits are complete, PREGEN stops here and displays the following statement. If not, PREGEN returns to Question 3.00 and displays questions for the next distribution kit.

```
>; ==================================================
>; PREGEN - Stopped at time on date
>; ==================================================
```

3.3.7 PREGEN for a Small Dual-Disk System

If you answer YES to Question 2.00, PREGEN displays the following dialog.

```
>* 03.00 Copy the DECnet distribution kit? [Y/N]:
>;
>; Answer this question YES if you have this distribution kit, and you
>; will be generating a DECnet network.
>;
>* 04.00 Where is the network distribution kit loaded? [S]:
>;
>; Specify the disk or tape drive where the distribution kit is or will
>; be loaded (e.g. DK1 or MM0).
>;
>* 04.01 Is the disk already loaded in ddu:? [Y/N]:
>;
>; Answer this question YES when the distribution kit is loaded and ready
>; to be mounted. PREGEN will actually mount the disk.
```

At this point, PREGEN copies the command files from the current distribution kit to the system disk, which serves as a temporary storage device. If the kit just copied was the Network or the DECnet distribution kit, PREGEN returns to Question 3.00 to display the next distribution kit. When all required kits are copied, PREGEN displays Question 5.00.

```
>* 05.00 Where is the NETGEN disk loaded? [S]:
>;
>; The NETGEN disk, created by PREGEN, is the primary disk used during a
>; network generation. It will contain all command files, from all
>; distribution kits, which are necessary during the question/answer
>; phase of the generation.
>;
>; Specify the disk drive where the NETGEN disk is or will be loaded
>; (e.g. DM0).
>;
>* 05.01 Is the disk already loaded in ddu: (netgen disk drive)? [Y/N]:
>;
>; Answer this question YES when the NETGEN disk is loaded and ready to
>; be mounted. PREGEN will actually mount the disk if it is not already
>; mounted.
>;
>* 06.00 Should the NETGEN disk be initialized? [Y/N]:
>;
>; Answer this question YES if the disk should be initialized. This will
>; place an initial file system on the disk, and destroy any files that
>; may have been on the disk previously. If the disk has already been
>; properly initialized, answer NO.
>;
>; If you answer YES, the disk will be given the label "NETGEN".
```

PREGEN displays Question 6.00 only if the NETGEN disk has not already been mounted; and displays the following statement if you answer YES to Question 6.00.

(continued on next page)

```
>; The disk will be initialized with the label "NETGEN".
>;
>* 06.01 What is the label used to mount the NETGEN disk [S]:
>;
>; Specify the label PREGEN is to use when mounting the previously
>; initialized NETGEN disk. This should be from 0 to 12 alphanumeric
>; characters.
```

PREGEN displays Question 6.01 if you answer NO to Question 6.00.

At this point, the command files stored on the system disk are copied to the NETGEN disk, and then deleted from the system disk. This completes PREGEN.

```
>; ================================================
>; PREGEN - Stopped at time on date
>; ================================================
```

3.3.8 Sample Standard PREGEN

The following listing is a sample of a standard PREGEN.

```
>SET /UIC=[137,10]
 @PREGEN
>;
>; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
>; PREGEN - RSX-11M/S/M-PLUS CEX System Pre-Generation Procedure
>;            Started at 16:08:13 on 24-FEB-83
>; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
>;
>; Copyright (C) 1981, 1982, 1983 by
>; Digital Equipment Corporation, Maynard, Mass.
>;
>* 01.00 Do you wish to see the PREGEN notes? [Y/N]:
>* 02.00 Are you running on a small dual-disk system? [Y/N]:
>* 04.00 Where is the Network distribution kit loaded? [S]: DL:
>* 04.01 Is the disk already loaded in DL:? [Y/N]: Y
>* 05.00 Where is the NETGEN disk loaded? [S]: DM1:
>* 05.01 Is the disk already loaded in DM1:? [Y/N]: Y
>* 06.00 Should the NETGEN disk be initialized? [Y/N]: Y
>;
>; The disk will be initialized with the label "NETGEN".
>;
>;
>; Copying UIC "[137,10]".
>; Copying UIC "[1,2]".
>; Copying UIC "[132,34]".
>; Copying UIC "[141,34]".
>;
>* 07.00 Should the Network object files be moved to the NETGEN disk? [Y/N]: Y
>;
>; Copying UIC "[137,10]".
>; Copying UIC "[137,24]".
>; Copying UIC "[130,10]".
>; Copying UIC "[130,24]".
>; Copying UIC "[131,10]".
>; Copying UIC "[131,24]".
>; Copying UIC "[132,24]".
>; Copying UIC "[132,54]".
>; Copying UIC "[135,10]".
>; Copying UIC "[135,24]".
>; Copying UIC "[141,24]".
>; Copying UIC "[141,54]".
>;
DMO -- TTO:  dismounted from DLO:  *** Final dismount initiated ***
16:13:28 *** DLO: -- Dismount complete
>;
>* 03.00 Copy the DECnet distribution kit? [Y/N]: Y
>* 04.00 Where is the DECnet distribution kit loaded? [S]: DL:
>* 04.01 Is the disk already loaded in DL:? [Y/N]: Y
>;
>; Copying UIC "[137,10]".
>;
>* 07.00 Should the DECnet object files be moved to the NETGEN disk? [Y/N]: Y
>;
>; Copying UIC "[137,10]".
```

(continued on next page)

```
>; Copying UIC "[1,24]".
>; Copying UIC "[1,2]".
>; Copying UIC "[130,10]:.
>; Copying UIC "[130,24]".
>; Copying UIC "[131,10]".
>; Copying UIC "[131,24]".
>; Copying UIC "[131,34]".
>; Copying UIC "[131,54]".
>; Copying UIC "[132,10]".
>; Copying UIC "[132,24]".
>; Copying UIC "[133,10]".
>; Copying UIC "[133,24]".
>; Copying UIC "[133,34]".
>; Copying UIC "[133,54]".
>; Copying UIC "[134,24]".
>; Copying UIC "[135,24]".
>; Copying UIC "[136,10]".
>; Copying UIC "[136,24]".
>; Copying UIC "[140,10]".
>; Copying UIC "[140,24]".
>; Copying UIC "[141,24]".
>; Copying UIC "[200,200]".
>;
DM0 -- TT0:  dismounted from DL0:  *** Final dismount initiated ***
16:27:52 *** DL0: -- Dismount complete
>;
>;
>* 03.00 Copy the PSI distribution kit? [Y/N]: Y
>* 04.00 Where is the PSI distribution kit loaded? [S]: DL:
>* 04.01 Is the disk already loaded in DL:? [Y/N]: Y
>;
>; Copying UIC "[151,10]".
>;
>* 07.00 Should the PSI object files be moved to the NETGEN disk? [Y/N]: Y
>;
>; Copying UIC "[151,10]".
>; Copying UIC "[1,1]".
>; Copying UIC "[155,24]".
>; Copying UIC "[153,54]".
>; Copying UIC "[152,24]".
>; Copying UIC "[154,24]".
>; Copying UIC "[153,24]".
>; Copying UIC "[140,10]".
>; Copying UIC "[140,24]".
>;
DM0 -- TT0:  dismounted from DL0:  *** Final dismount initiated ***
16:33:31  *** DL0: -- Dismount complete
>;
>;
DM0 -- TT0:  dismounted from DM1:  *** Final dismount initiated ***
16:33:34  *** DM1: -- Dismount complete
>;
>; ==============================================================
>; PREGEN - Stopped at 16:33:35 on 24-FEB-83
>; ==============================================================
>;
>@ <EOF
>
```

3.3.9 Sample Small Dual-Disk PREGEN

The following listing is a sample of a small dual-disk PREGEN.

```
SET /UIC=[137,10]
@PREGEN
;
; ======================================================================
; PREGEN - RSX-11M/S/M-PLUS CEX System Pre-Generation Procedure
;          Started at 15:08:26 on 01-FEB-83
; ======================================================================
;
; Copyright (C) 1983 by
; Digital Equipment Corporation, Maynard, Mass.
;
* 01.00 Do you wish to see the PREGEN notes? [Y/N]:
* 02.00 Are you running on a small dual-disk system? [Y/N]: Y
* 04.00 Where is the Network distribution kit loaded? [S]: DL0
* 04.01 Is the disk already loaded in DL0:? [Y/N]: Y
;
; Copying UIC "[137,10]".
; Copying UIC "[1,2]".
; Copying UIC "[132,34]".
; Copying UIC "[141,34]".
;
DMO -- TT51:  dismounted from DL0:   *** Final dismount initiated ***
;
* 03.00 Copy the DECnet distribution kit? [Y/N]: Y
* 04.00 Where is the DECnet distribution kit loaded? [S]: DL0
* 04.01 Is the disk already loaded in DL0:? [Y/N]: Y
;
; Copying UIC "[137,10]".
;
DMO -- TT51:  dismounted from DL0:   *** Final dismount initiated ***
;
* 03.00 Copy the PSI distribution kit? [Y/N]:
* 05.00 Where is the NETGEN disk loaded? [S]: DL0
* 05.01 Is the disk already loaded in DL0:? [Y/N]: Y
* 06.00 Should the NETGEN disk be initialized? [Y/N]: Y
;
; The disk will be initialized with the label "NETGEN".
;
DMO -- TT51:  dismounted from DL0   *** Final dismount initiated ***
;
; Copying Network files
;
; Copying UIC "[137,10]".
; Copying UIC "[1,2]".
; Copying UIC "[132,34]".
; Copying UIC "[141,34]".
;
; Copying DECnet files
;
; Copying UIC "[137,10]".
;
;
DMO -- TT51:  dismounted from DL0:   *** Final dismount initiated ***
>;
; ====================================================================
; PREGEN - Stopped at 15:14:12 on 01-FEB-83
; ====================================================================
;
>@ <EOF>
>
```

Chapter 4
NETGEN Dialog: NET

The first part of the NETGEN dialog presents NET. NET displays a series of network questions relating to the Communications Executive (CEX) and other common components.

The following NET dialog represents the text NETGEN displays when performing an initial generation in Question and Answer Mode. A Component Mode or a Restore Mode generation sometimes displays a slight variation in the wording of specific questions. For example, the defaults displayed sometimes vary from those displayed in this dialog. Your responses should always be guided by the question and text displayed on your terminal.

4.1 Starting NETGEN

In order to run NETGEN, you must have access privilege to the target disk and you must have your target disk mounted.

4.1.1 Running NETGEN on an RSX-11M/11M-PLUS System

On an RSX-11M/11M-PLUS system, there are two ways to gain the required access privilege:

1. Log in as a privileged user.
2. Allocate the target disk for your exclusive use.

In addition, you must use MCR as your Command Language Interpreter (CLI) for NETGEN. If MCR is not your command language interpreter, then you must change to MCR. To do this, enter:

```
> SET TERM MCR
```

In performing a NETGEN, you may prefer to use a hardcopy terminal to generate a clear permanent record.

To start NETGEN, make sure the NETGEN disk is mounted. To do this, enter the following if a PREGEN was performed.

```
> ALL dduu:
> MOU dduu: NETGEN
```

If PREGEN was not required, enter the following:

```
> ALL dduu:
> MOU dduu: DECKIT
```

NETGEN is performed by executing an indirect command file. Invoke NETGEN as follows:

```
>@dduu:[137,10]NETGEN
```

The variable, *dduu:*, is the NETGEN disk you just mounted. All sections of the NETGEN procedure are then automatically invoked in turn.

4.1.2 Running NETGEN on a VAX/VMS System

If you are doing an RSX-11S NETGEN on a VAX/VMS system, you should have access to the following required privileges:

1. Change Mode to Kernel Privilege (CMKRNL). This allows you to change default UICs and directories. You must have this privilege before you can set the remaining privileges.
2. Logical I/O Privilege (LOG-IO). This privilege permits RSX-11M VMR to do logical I/O on task image files.
3. System Protection Privilege (SYSPRV). This privilege allows you to create files in directories not owned by the current UIC.

If you have the SETPRV privilege, you can establish the required privileges with the following MCR command:

```
> SET PROC/PRIV=(privilege[,...])
```

To find out what privileges you have, use the following MCR command:

```
> SHO PROC/PRIV
```

For more information on using these privileges, see the *VAX/VMS System Manager's Guide*.

In addition, you must use MCR as your command language interpreter (CLI) for NETGEN. If MCR is not your command language interpreter, then you must change to MCR. To do this, log in using the /CLI=MCR qualifier. For example:

```
Username: SYSTEM/CLI=MCR
Password:
```

In performing a NETGEN, you may prefer to use a hardcopy terminal to generate a clear permanent record.

To start NETGEN, make sure the NETGEN disk is mounted. To do this, enter the following if a PREGEN was performed.

```
> ALL dduu:
> MOU dduu: NETGEN
```

If PREGEN was not required, enter the following:

```
> ALL dduu:
> MOU dduu: DECKIT
```

NETGEN is performed by executing an indirect command file. Invoke NETGEN as follows:

```
>@dduu:[137,10]NETGEN
```

The variable, *dduu:*, is the NETGEN disk you just mounted. All sections of the NETGEN procedure are then automatically invoked in turn.

4.2 Initialization Questions

In any mode, the following initialization questions are displayed. Figure 4-1 illustrates the sequence of questions for general initialization.

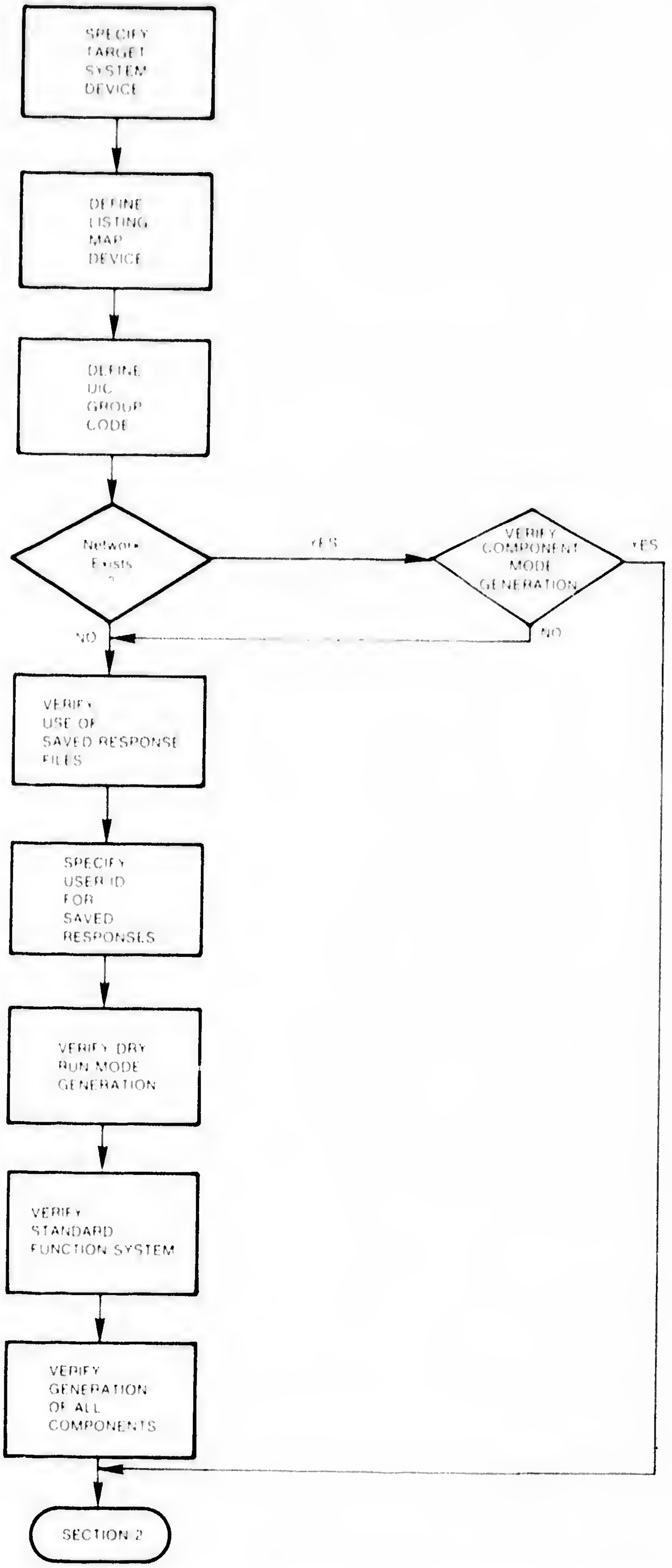
SPECIFY TARGET SYSTEM DEVICE
DEFINE LISTING MAP DEVICE
DEFINE UIC GROUP CODE
Network Exists ?
YES
VERIFY COMPONENT MODE GENERATION
YES
NO
NO
VERIFY USE OF SAVED RESPONSE FILES
SPECIFY USER ID FOR SAVED RESPONSES
VERIFY DRY RUN MODE GENERATION
VERIFY STANDARD FUNCTION SYSTEM
VERIFY GENERATION OF ALL COMPONENTS
SECTION 2

Figure 4-1: NET — Section 1 — General Initialization

```
>;
>; ==============================================================
>;  NET - RSX-11M/S/M-PLUS CEX System Generation Procedure
>;        Started at time on date
>; ==============================================================
>;
>; Copyright (C) 1983 by
>; Digital Equipment Corporation, Maynard, Mass.
>;
>; Generate a CEX System, version ver. no., for your RSX-11M/S/M-PLUS
>; target system.
>;
>; The following CEX Products may be generated
>;      DECnet
>;      PSI
>;
>; The distribution kits must be up to the current patch level. If
>; necessary, you should stop the generation and apply the necessary
>; patches.
>;
>; The logical device name LB: should already be assigned to the device
>; which contains the library files for the system you are generating.
>; These files are EXELIB.OLB, EXEMC.MLB, RSXMAC.SML, SYSLIB.OLB, and,
>; for RSX-11S, 11SLIB.OLB.
>;
>; The logical device names IN:, OU:, LS: and MP: should not be assigned
>; to any devices before starting the generation. These logical device
>; names are used by NETGEN to refer to various disks used during the
>; generation.
>;
>; <EOS> Do you want to:
>*        <RET>-Continue, E-Exit [S]:
>;
>; <RET>- Continue with normal processing
>; E     - Terminate the generation
>;
>; ==============================================================
>;  NET - Section 1 - General Initialization
>; ==============================================================
>;
>;
>* 01.00 Do you want to see the NETGEN notes/cautions? [D=N] [Y/N]:
>;
>; The notes/cautions describe the prerequisite conditions for starting
>; the NETGEN procedure.
>;
>* 01.00 Do you want to see the NETGEN notes/cautions? [D=N] [Y/N]: Y
>;
>; Note the following:
>; ------------------
>;
>; . If you have not already performed a SYSGEN for your target system,
>;   you must do so before continuing.
>;
>; . The privileged tasks generated during NETGEN use configuration
>;   dependent parameters produced by SYSGEN. For RSX-11M/S/M-PLUS
>;   systems, the RSXMC.MAC file and the RSX11M.STB (or RSX11S.STB) file
>;   for the target system are necessary. If they are not already on
>;   the target device under the proper UIC, NETGEN will move them from
>;   the user's system device to the target device.
>;
```

(continued on next page)

```
>;  . If your target device contains useful files, it is recommended that
>;    you back it up before continuing, as the device will be write
>;    enabled during the NETGEN sequence.
>;
>;  . The proper system libraries for the target system must be on the
 ;    logical device LB: under the UIC [1,1] while you are performing your
 ;    NETGEN. These libraries are:
 ;
 ;          EXELIB.OLB, EXEMC.MLB, RSXMAC.SML, and SYSLIB.OLB.
 ;
 ;    In addition, for an RSX-11S NETGEN, the 11SLIB.OLB file is required.
 ;
 ;  . If your target system supports the Queue Manager (QMG), and you wish
 ;    to generate network tasks which may use this facility, the Queue
 ;    Manager object library must be on the logical device LB: under
 ;    UIC [1,24] while you are performing your NETGEN. This file is:
 ;
 ;          QMG.OLB
 ;
 ;  . If you wish to generate network tasks which require support for RMS
 ;    file access, you must have the RMS files on your logical LB: device
 ;    prior to performing your NETGEN. NETGEN will look for these files
 ;    under the UIC determined by SYSGEN. The following are the files
 ;    that NETGEN will lock for:
 ;
 ;          RMSLIB.OLB, RMS11X.ODL and RMS12X.ODL.
 ;          RMSRES.TSK and RMSRES.STB (if resident libraries are supported).
 ;
 ;  . If your target system supports a memory resident or a supervisor
 ;    mode FCS library, and you wish the network tasks to use this
>;    library, the FCS library files must be on the logical device LB:
 ;    under UIC [1,1] while you are performing your NETGEN. These files
 ;    are:
 ;
 ;          FCSRES.TSK and FCSRES.STB (memory resident FCS library files).
 ;          FCSFSL.TSK and FCSFSL.STB (supervisor Mode FCS library files).
 ;
>;  . The following installed tasks are required on your host system while
 ;    you are performing your NETGEN:
 ;
>;          PIP, LBR, MAC, and TKB for RSX-11M/S/M-PLUS NETGENs.
>;          STK (slow task builder) for RSX-11M-PLUS NETGENs.
 ;
 ;    If these tasks are not already installed, and you are logged in as a
>;    privileged user, NETGEN will install them automatically. If TKB and
>;    and MAC are installed, you may want to remove them and reinstall
 ;    them with an increment of 3000. to 15000. bytes so the build section
>;    of NETGEN will run faster.
>;
>;  . The following installed tasks are required on your host system while
>;    you are performing your NETGEN, under the following conditions:
>;
>;          LOA and UNL if device drivers require loading.
>;          MOU and DMO if disks require mounting.
>;          UFD if the required UICs do not already exist.
>;
>;    If these tasks are not already installed, and you are logged in as a
>;    privileged user, NETGEN will install them automatically.
>;
>;  . If you are generating more than one network onto the same target
>;    disk, the network help file ([1,2]NETHLP.ULB) and the language
>;    libraries ([1,1]NETFOR.OLB and [1,1]NETLIB.MLB) will be replaced
>;    each time NETGEN is run. You may want to save these files before
>;    doing the next NETGEN. This is of particular interest if one of the
>;    networks is for RSX-11S and the other network is for RSX-11M or
```

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```
;   RSX-11M-PLUS.
;
; . For questions that can be answered YES or NO, the default is NO
;   unless otherwise specified. For questions with defaults, the
;   default is produced by pressing a carriage return ( RET ) in
;   response to the question.
;
; . Additional explanatory text for each question may be obtained by
;   hitting the ESCAPE key.
;
; . Unless otherwise specified, it is possible to interrupt a series of
;   questions by typing CTRL/Z . You will then be given the options
;   of either restarting the section from the top, temporarily stopping
;   the generation, or terminating the generation.
;
* 02.00 Target system device [dduu, D=SY00:] [S]:
;
; This device will contain all files required to run the network being
; generated. This includes all task files, data bases, command files,
; and generation work files. This must be a Files-11 disk device. The
; trailing colon (e.g. SY:) is optional. The default device is SY:.
```

NETGEN displays Questions 2.01 and 2.02 only if the device has not been mounted. If you answer YES to Question 2.01, NETGEN will mount the device.

```
* 02.01 Is dduu ready? [D=N] [Y/N]:
;
; Load the disk into drive dduu: and start the drive before answering
; YES to this question.
;
* 02.02 Volume label for dduu: [D=None] [S R:0.-12.]
;
; A volume label is required for all mountable devices. This volume
; label was set when the volume was initialized.
```

The following error message and Question 2.03 appear only if the device could not be properly mounted.

```
; An error occurred when the volume was mounted. Possibly the volume is
; not properly loaded, the volume label was incorrectly supplied, the
; volume was not initialized to Files-11, or the "MOU" task was not
; installed.
;
* 02.03 Do you wish to specify a different device? [D=N] [Y/N]:
;
; If you answer YES, you will be asked for a different device name.
;
* 03.00 Listing/map device? [dduu, D=None] [S]:
;
; This device will contain all list files and map files generated by the
; assembler and task builder. This must be either a Files-11 disk device,
; or the LP: or NL: devices. The trailing colon (e.g. SY:) is optional.
; If no maps and listings are desired at all, respond with a carriage
; return.
```

If you want maps and listings on a device other than a target device, use another available device. Approximately 3,000 blocks are required for maps and listings, depending on the optional components you specify. If you specify a device in Question 3.00 that you have not yet defined to the system, you will be asked a series of questions similar to Questions 2.01 through 2.03.

(continued on next page)

```
>* 04.00 UIC Group Code for NETGEN output? [O R:1-377 D:5] [S]:
>;
>; Specify the UIC Group Code under which all generated files will
>; reside. Work files, source files, library and object files, listing
>; files, map files, and task and data base files will all appear under
>; various user codes within this group (e.g. [5,*]). Files which
>; already exist under these UICs may be deleted or purged.
>;
>; Note that the user must have privileges to create, write, read, and
>; delete all files under the chosen UIC Group Code.
```

When you do your first NETGEN, you can choose any UIC. However, if you do another NETGEN and you want to make use of your previous answers, then you must specify the same UIC you specified in your first NETGEN. Similarly, specify the same UIC if you do a NETGEN in Component Mode.

```
>* 05.00 Do you want tc perform a Component Mode generation? [D=N] [Y/N]:
>;
>; If a CEX system has already been generated on [x,], you may
>; wish to generate only components for that system. Components are
>; those tasks and/or data bases which do not change the previously
>; defined network configuration. If you wish to generate only
>; components, answer YES, and only component questions will be asked.
```

NETGEN displays Question 5.00 only if you have previously performed a full NETGEN.

Once you specify Component Mode, NETGEN runs in Component Mode throughout; responses are not saved, and the NETINS.CMD file is not updated (Chapter 7).

NETGEN displays Question 6.00 only if you have performed one previous NETGEN.

```
>; Saved responses were detected. These were compiled on date at
>; time with a User ID of "user id".
>;
>* 06.00 Do you wish to use these saved responses? [D=N] [Y/N]:
>;
>; Answer this question YES if you wish to use the responses from
>; date at time, User ID "user id".
>;
>; If you answer YES, these saved responses will be used to answer as
>; many of the questions as possible, for the new system you are
>; generating. If these saved responses are incomplete, NETGEN will
>; use the responses it finds and prompt you for the remainder of the
>; responses. If you answer NO, your previous responses will be ignored.
```

(continued on next page)

NETGEN displays the following text and Question 6.01 if you have previously performed two or more NETGENs.

```
>; Saved responses were detected. These were compiled on date at
>; time with a User ID of "user id".
>;
>; An earlier set of saved responses was compiled on date at
>; time with a User ID of "user id".
>;
>* 06.01 Do you wish to use the later set of saved responses? [D=N] [Y/N]:
>;
>; Answer this question YES if you wish to use the responses from
>; date at time, User ID "user id".
>;
>; If you answer YES, these saved responses will be used to answer as
>; many of the questions as possible, for the new system you are
>; generating, and the earlier set of saved responses (from date at
>; time, User ID "user id") will be lost.
>;
>; If these saved responses are incomplete, NETGEN will use the responses
>; it finds and prompt you for the remainder of the responses.
>;
>; If you answer NO, you will be asked about the earlier set of saved
>; responses.
>;
>* 06.02 Do you wish to use the earlier set of saved responses? [D=N] [Y/N]:
>;
>; Answer this question YES if you wish to use the responses from
>; date at time, User ID "user id".
>;
>; If you answer YES, these saved responses will be used to answer as
>; many of the questions as possible, for the new system you are
>; generating, and the later set of saved responses (from date at
>; time, User ID "user id") will be lost.
>;
>; If these saved responses are incomplete, NETGEN will use the responses
>; it finds and prompt you for the remainder of the responses.
>;
>; If you answer NO, these saved responses (from date at time,
>; User ID "user id") will be lost.
>;
>* 06.03 Do you want to display these saved responses? [D=N] [Y/N]:
>;
>; If you answer YES to this question, when the saved responses are used,
>; the data restored via these saved responses will be displayed on the
>; terminal.
```

It is recommended that you answer Question 6.03 YES.

(continued on next page)

```
>* 06.04 Do you want to change these saved responses? [D=N] [Y/N]:
>;
>; If you answer YES to this question, when each section is finished, you
>; will be given the option of repeating the section. If you choose to
>; repeat the section, all questions will be asked again, and you answer
>; the section anew. This allows you to change your previous responses.
>;
>; When possible, previous responses are displayed as defaults, so that
>; typing <RET> will cause the original response to be used again. Note
>; that for some questions this is not possible. Responses to these
>; questions must always be fully specified, each time. For example, all
>; of the questions in NET section 3 are of the type which must always be
>; completely respecified.
>;
>; If you answer NO to this question, your previous responses are used as
>; they stand, and you are given no option for changing them.
>;
>* 06.05 Have you performed a SYSGEN since your last NETGEN? [D=N][Y/N]:
>;
>; Answer this question YES if you have performed a new SYSGEN since the
>; NETGEN being restored was done. Answer NO if a new SYSGEN has not
>; been done. This will determine whether or not new RSXMC.MAC and
>; RSX11M.STB files are needed.
>;
>; If you answer YES, several sections may be automatically repeated, in
>; order to reset answers or values which were based on the old system
>; files. If you answer NO, sections will be repeated only at your
>; request.
>;
>* 07.00 User ID for saving new responses? [D=None] [S R:0.-30.]:
>;
>; The responses given during this generation will be saved for later
>; reference or re-use. You should provide some ID (up to 30 characters)
>; by which you will be able to tell, at some future time, whether or not
>; these saved responses are usable.
>;
>; Note that this string must not contain any single-quote (') or double-
>; quote (") characters.
```

NETGEN does not display Question 7.00 in Component Mode.

It is advisable that you do not use a default here. You do not need to code in the date and time; they are stored. Any characters, including spaces and punctuation marks, can be used such as LARRY DAY: DRY RUN 2.

NETGEN does not display Questions 8.00, 9.00, or 10.00 in Component Mode.

```
>* 08.00 Is this generation to be a dry run? [D=N] [Y/N]:
>;
>; If you answer YES to this question, the system you specify will not
>; actually be built. Your responses will be saved, however, and a real
>; generation may be performed later, using these saved responses.
>;
```

(continued on next page)

```
>* 09.00 Do you want a standard function network? [D=N] [Y/N]:
>;
>; Answering YES to this question will result in NETGEN asking a minimum
>; number of questions. A full compliment of components will be generated
>; and most optional parameters will be filled in with predefined values.
>; If a value has not been defined for a parameter, NETGEN will ask the
>; required questions.
>;
```

If you answer YES to Question 9, NETGEN does not display Question 10.

```
>* 10.00 Should all components be generated? [D=N] [Y/N]:
>;
>; If you answer YES to this question, your system will be generated with
>; the full compliment of components but you will still have to specify
>; the values for all optional parameters. If you answer NO, you will be
>; asked on an individual basis whether or not each component is to be
>; generated.
```

NOTE

Certain components (for example, the network management components, NTL, NTINIT) are always generated despite your response to Question 10.00.

```
>* 11.00 Should old files be deleted? [D=N] [Y/N]:
>;
>; If this question is answered YES, all old files on the target, listing
>; and map devices under the target UICs (except those files which will
>; be needed during this generation) will be deleted.
>;
>; This is recommended if the target UICs contain files from a previous
>; generation, or if saved responses are being used to recover from a
>; system crash.
```

Question 11.00 is not displayed in Dry Run Mode.

```
>; <EOS> Do you want to:
>;        <RET>-Continue, R-Repeat section, P-Pause, E-Exit
```

4.3 Define the Target System

This section defines a number of characteristics for your target system. These characteristics define a DECnet-only system, a DECnet/PSI system, and operating system characteristics.

Figure 4-2 illustrates the sequence of questions for defining the target system.

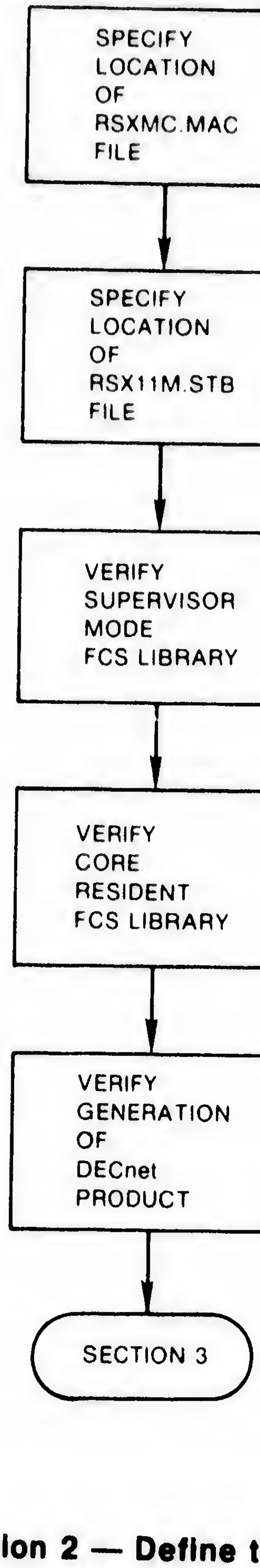
SPECIFY LOCATION OF RSXMC.MAC FILE
SPECIFY LOCATION OF RSX11M.STB FILE
VERIFY SUPERVISOR MODE FCS LIBRARY
VERIFY CORE RESIDENT FCS LIBRARY
VERIFY GENERATION OF DECnet PRODUCT
SECTION 3

Figure 4-2: NET — Section 2 — Define the Target System

```
; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
;  NET - Section 2 - Define the Target System
; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
;
* 01.00 Use the RSXMC.MAC on dduu:[uic]? [D=N] [Y/N]:
;
; RSXMC.MAC is the file which defines the features built into the target
; operating system. A copy of this file has been found on the Target
; Device/UIC. If this is a correct copy, answer the question YES.
```

NETGEN displays Question 1.00, if the RSXMC.MAC file is found on the target disk and under the network UIC.

```
* 02.00 RSXMC.MAC location? (dduu:[g,m], D=target device:[uic]) [S]:
;
; RSXMC.MAC is the file which defines the features built into the target
; system. This file must be moved from its present location to
; dduu: [uic]. The present location must be specified as a device
; and UIC, in any of the following formats.
;
;   dduu:[ggg,mmm]       Specify both device and UIC
;   dduu:                Specify device, with UIC of default uic
;   [ggg,mmm]            Specify UIC, on device target device:
```

NETGEN displays Question 2.00 only if NETGEN cannot locate this file on the target disk and under the network UIC.

After you specify its location, NETGEN moves RSXMC.MAC to the correct location. This file is customarily stored on LB:[11,10]. If you do not know the location of the file, you may need to press ^Z to get a break question, and then pause to gain access to the operating system in order to search for it. Enter its location in one of the indicated formats.

NOTE

> If you specify a device in response to this question, and if the device you specify is unknown to NETGEN, NETGEN will ask a series of questions similar to Questions 2.01 and 2.02, in Section 1.

```
; dduu:[UIC]RSXMC.MAC is being scanned to define your target system.
; This may take up to several minutes.
;
; The target is an RSX-11M-PLUS system, with...
;       A 20k-Executive
;       Kernel data space enabled
;       Extended memory support (more than 124k words of memory)
;       UMR support
;       Multi-user protection
;       Extended instruction set (EIS)
;       Powerfail recovery support
;       Dynamic task checkpoint allocation
;       PLAS support
;       No Queue Manager (QMG) support
```

This list represents the information NETGEN obtained from the RSXMC.MAC file. Your system may display a different list.

(continued on next page)

```
* 03.00 Use the RSX11M.STB on dduu:[uic] [D=N]? [Y/N]:
;
; RSX11M.STB is the file which defines the global symbols for the target
; operating system. A copy of this file has been found on the Target
; Device/UIC. If this is a correct copy, answer the question YES.
```

NETGEN displays Question 3.00, if the RSX11M.STB file is found on the target disk and under the network UIC. For RSX-11S systems, NETGEN displays the file name, RSX11S.STB.

```
* 04.00 RSX11M.STB location (dduu:[g,m], D=dduu:[uic]) [S]:
;
; RSX11M.STB is the file which defines the global symbols for the target
; system. This file must be moved from its present location to
; dduu:[uic]. The present location must be specified as a device
; and UIC, in any of the following formats.
;
;    dduu:[ggg,mmm]        Specify both device and UIC
;    dduu:                 Specify device, with UIC of default UIC
;    [ggg,mmm]             Specify UIC, on device dduu:
```

NETGEN displays Question 4.00 only if NETGEN cannot locate this file on the target disk and under the network UIC. For RSX-11S systems, NETGEN displays the file name RSX11S.STB.

After you specify its location, NETGEN moves RSX11M.STB to the correct location. This file is customarily stored on LB:[1,54] for RSX-11M/11M-PLUS systems and on LB:[1,64] for RSX-11S systems. If you do not know the location of the file, you may need to press ^Z to get a break question, and then pause to gain access to the operating system in order to search for it. Enter its location in one of the indicated formats.

NOTE

If you specify a device in response to this question, and if the device you specify is unknown to NETGEN, NETGEN displays a series of questions similar to Questions 2.01 and 2.02 in Section 1.

```
>* 05.00 Should tasks link to the supervisor mode FCS library? [D=N] [Y/N]:
>;
>; If you have a supervisor mode FCS library and you would like the
>; network tasks to link to it, answer this question YES.
>;
>; Note that this library must be located as follows:
>;        LB00:[1,1]FCSFSL.TSK
>;        LB00:[1,1]FCSFSL.STB
```

NETGEN displays Question 5.00 only for RSX-11M-PLUS systems, if you specified the supervisor mode FCS library during SYSGEN. Answering this question YES, causes tasks that link to this library to be smaller.

(continued on next page)

```
>* 06.00 Should tasks link to the memory resident FCS library? [D=N] [Y/N]:
>;
>; If you have a memory resident FCS library and you would like the
>; network tasks to link to it, answer this question YES.
>;
>; Note that this library must be located as follows:
>;              LB00:[1,1]FCSRES.TSK
>;              LB00:[1,1]FCSRES.STB
>;
```

NETGEN displays Question 6.00 only for RSX-11M/-11M-PLUS systems, if you specified the Memory Resident FCS library during SYSGEN. Answering this question YES, causes tasks that link to this library to be smaller.

The following statement appears in Question and Answer Mode or Restore Mode for a DECnet-only system. It is not displayed in Component Mode.

```
 ; The DECnet CEX Product will be generated.
```

Depending on the type of kit you purchased, NETGEN displays one of the following statements.

- Routing or nonrouting nodes can be generated from your distribution kit.
- Nonrouting nodes can be generated from your distribution kit.

NETGEN displays Questions 7.00 and 7.01 in Question and Answer Mode or Restore Mode, only if you are generating a DECnet/PSI system. NETGEN displays similar questions in Component Mode, if you are generating a DECnet-only system or a DEcnet/PSI system.

```
>* 07.00 Generate the DECnet product? [D=N] [Y/N]:
>;
>; If you want to include the indicated CEX Product in your network
>; system, answer the question YES.
```

If you are adding or changing specific PSI components to an existing DECnet system, and you do not need to supply DECnet components, answer this question NO.

If you are adding or changing specific DECnet components to an existing DECnet system, answer this question YES. If you want to include the DECnet components in your original DECnet/PSI generation, answer this question YES.

```
>* 07.01 Generate the PSI product? [D=N] [Y/N]:
>;
>; If you want to include the indicated CEX Product in your network
>; system, answer the question YES.
>;
>; <EOS> Do you want to:
>*        <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit
```

4.4 Define the System Lines

To define your system lines, NETGEN asks you to specify a Device Driver (DDM) Process name. The DDM identifies a process that controls an I/O device. DECnet includes DDCMP devices, EPM (the Ethernet Protocol Manager) devices, and DLM (Data Link Mapping) pseudodevices. PSI includes X.25 devices.

- DECnet DDMs support devices that allow DECnet users to communicate with other DECnet users using the DECnet DDCMP protocol.
- EPM DDMs support Ethernet devices that allow DECnet users to communicate with other DECnet users using the Ethernet protocol.
- DLM DDMs are pseudodevices that allow DECnet users to communicate with other DECnet users using X.25 circuits over a PSN. DLM circuits are referenced as if they are circuits on a multipoint tributary.
- PSI DDMs support devices that are connected to the Packet Switching Network (PSN).

DLM and PSI circuits are available only if you have purchased a license for the Packetnet System Interface (In this manual, the Packet Switching Network is synonymous with the Public Packet Switching Network.).

In Questions 2.00 through 5.00, NETGEN displays the variable *dev*. Device names (*dev*) can have different forms. In each case, NETGEN will display the correct form for the specific communications device you specify in Question 1.00. For example, KDP-2-1.3 would be displayed on-line using the following format. This is the longest form a device name can take.

dev-x-y.z

where:

dev	is the current Device Driver Module.
x	is the number of this controller.
y	is the number of this line on the controller.
z	is the number of this multipoint tributary on the current line.

NOTE

Some devices (DMC, DMR, DUP) do not support multiple lines or tributaries. For example, DMC supports one line having the format, *dev-x*.

Figure 4–3 illustrates the sequence of questions for defining the system lines.

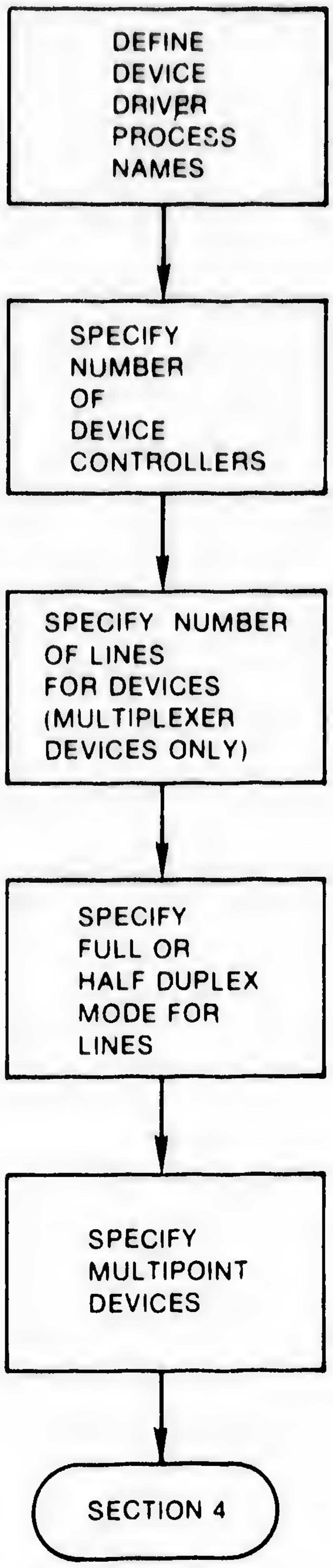
DEFINE DEVICE DRIVER PROCESS NAMES
SPECIFY NUMBER OF DEVICE CONTROLLERS
SPECIFY NUMBER OF LINES FOR DEVICES (MULTIPLEXER DEVICES ONLY)
SPECIFY FULL OR HALF DUPLEX MODE FOR LINES
SPECIFY MULTIPOINT DEVICES
SECTION 4

Figure 4–3: NET — Section 3 — Define the System Lines

```
>; ===================================================================
>;  NET - Section 3 - Define the System Lines
>; ===================================================================
>;
>* 01.00 Device Driver Process name? [<RET>=Done] [S R:0-3]:
>;
>; The Device Driver Module (DDM) Process name identifies a process
>; which controls an I/O device. Enter a carriage return when there are
>; no more devices to support.
>;
>; The legal DECnet device driver process names are:
>;
>; Name   Physical device            Name          Physical device
>; ----   ---------------            ----          ---------------
>; DMC    DMC11 or DMR11             DL            DL11
>; DMP    DMP11                      DZ            DZ11
>; DU     DU11                       KDZ           KMC11/DZ11
>; DUP    DUP11                      PCL           PCL11
>; DV     DV11
>; KDP    KMC11/DUP11
>; UNA    DEUNA
>; DLM    PSI Data Link Mapping
```

Not all of these devices may be available to you.

If you have a Q-BUS (LSI) processor, such as a PDP-11/23, NETGEN displays the following list of devices instead of the above list:

```
>; The legal DECnet device driver process names are:
>;
>; Name   Physical device      Name   Physical device
>; ----   ---------------      ----   ---------------
>; DMV    DMV11                DLV    DLV11
>; DPV    DPV11                DZV    DZV11
>; DUV    DUV11
>; DLM    PSI Data Link Mapping
>; QNA    DEQNA
```

The following devices are available for DECnet/PSI systems other than those that use the Q-BUS:

```
>; The legal PSI device driver process names are:
>;
>; Name Physical device
>; ---- ---------------
>; SDP  DUP11
>; KMX  KMS11
```

If you have a Q-BUS (LSI) processor, NETGEN displays the following list for DECnet/PSI systems:

```
>; The legal PSI device driver process names are:
>;
>; Name Physical device
>; ---- ---------------
>; SDV  DPV11
>;
>* 01.01 Do you have a user written dev Device Driver? [D=N] [Y/N]:
>;
>; NETGEN does not have a Device Driver (DDM) Process for the dev.
>; If a user written Device Driver Process exists, NETGEN will create the
>; necessary command files to build a device driver for your device.
```

(continued on next page)

NETGEN displays Question 1.01 only if NETGEN does not recognize the device you entered. If you answer YES to this question, NETGEN displays a series of questions (not shown here) to help you specify the parameters for the particular device.

```
* 02.00 How many dev controllers are there? [D R:1.-16 D:1.]:
;
; Enter the number of dev controllers that are installed on the target
; system. Do not include any of the controllers which were specified
; during the target system's SYSGEN, since devices cannot be shared
; between the CEX system and the operating system.
```

If you have 3 DUP controllers, enter 3. For Data Link Mapping (DLM), considered to be a multipoint controller, you can specify more than one "controller" in this question. This allows you to group lines logically.

NETGEN displays Question 2.01, if you specified more than one device controller in Question 2.00. If you answer Question 2.01 YES, NETGEN displays Question 2.02.

```
* 02.01 Are all devs installed at the same device priority? [D=N] [Y/N]:
;
; All peripheral interfaces on PDP-11 processors are installed with a
; hardware device priority in the range of 4 to 6. This, together with its
; position on the UNIBUS (or Q-BUS), determines its priority in
; arbitrating for control of the BUS.
;
; Answer this question YES if all DEVs have been installed at the same
; device priority.
;
* 02.02 What is the dev device priority? [O R:4-6 D:5]:
;
; Enter the hardware device priority level for all Devs on the target
; system.
;
; Note that if the hardware device priority is later changed, the
; network value may be changed with CFE, NCP or VNP on a per line basis.
```

NOTE

In the dialog that follows, if no specific reference is made to being able to change a parameter using NCP, CFE, or VNP, that parameter will require a new NETGEN.

```
* 03.00 Number of lines used on dev? [D R:1.-max. no., D:1.]:
;
; Specify the number of lines to be used on the multiplexer device
; controller.
```

NETGEN displays Question 3.00 only for multiplexer devices.

```
* 03.01 CSR address for dev [O R:160000-177777 D:default CSR]:
;
; Specify the Control/Status Register (CSR) address for the controller.
; Use 177777 if the address is unknown.
;
; Note that the CSR address may later be changed with CFE, NCP or VNP.
```

The CSR address and the vector address are set up in the hardware when the device is first installed.

(continued on next page)

```
>* 03.02 Vector address for dev [O R:0-774 D:default Vector Address]:
>;
>; Specify the interrupt vector address for the controller. Use 0 if the
>; address is not known.
>;
>; Note that the vector address may later be changed with CFE, NCP or
>; VNP.
```

If you specify more than one device and these devices have been installed with different device priorities, NETGEN displays Question 3.03.

```
>* 03.03 Device priority for dev [O R:4-6 D:5]:
>;
>; Specify the hardware device priority for the controller.
>;
>; Note that if the hardware device priority is later changed, the
>; network value may be changed with CFE, NCP or VNP.
>;
>* 04.00 Is dev a FULL or HALF duplex line [D=FULL] [S]:
>;
>; Specify the duplex mode the line is to run in. This should either be
>; FULL or HALF (these may be abbreviated to F or H).
>;
>; Note that the duplex mode may later be changed with CFE, NCP or VNP.
>;
>* 04.01 Line speed for dev [D R:min-max D:default]:
>;
>; Specify the line speed in bits per second. If the line speed is
>; greater than 56000 bps, enter 56000. If the line speed is externally
>; determined, enter the speed at which the line is expected to operate.
>;
>; Note that this value can be overridden using CFE.
>;
>; Legal line speeds for synchronous and asynchronous devices
>; ------------------------------------------------------------
>; 50     110     150     600     1800    2400    4800    9600
>; 75     134     300     1200    2000    3600    7200
>;
>; Additional legal line speeds for synchronous devices
>; ------------------------------------------------------
>; 19200  For all synchronous devices, except the DUP11
>; 56000  For the DMC, DMP, and DMV devices only
```

Not all of these speeds are available for each device. Consult instructions for the specific device.

```
>* 04.02 Is DL-x a DL11-WA? [D=N] [Y/N]:
>;
>; Answer the question YES only if the device is a DL11-WA. The DL11-WA
>; is the only supported DL11 option that doesn't allow the Clear To Send
>; signal either to pass through the interface or to be set with a jumper.
```

NETGEN displays Question 4.02 only for DL11 devices. NETGEN must establish special handling for the Clear To Send signal for the DL11-WA.

(continued on next page)

```
• 04.03 Unit CSR address for dev [O R:160000-177777 D:default add.]:
;
; Specify the Control/Status Register (CSR) address for the device which
; the dev is controlling. Use 177777 if the address is unknown.
;
; Note that the unit CSR address may later be changed with CFE, NCP or
; VNP.
```

NETGEN displays Question 4.03 for each secondary device controlled by a primary device. For example, the primary device might be a KDP that controls a number of secondary DUP devices.

```
• 04.04 Modem control CSR address for dev [O R:160000-177777 D:def]:
;
; Specify the Control/Status Register (CSR) address for the modem
; control unit associated with the DEV. Use 177777 if the address is
; unknown.
;
; Note that the modem control CSR address may later be changed with CFE,
; NCP or VNP.
```

If you specify a device that requires a modem control device, such as KMX, NETGEN displays Question 4.04.

```
• 04.05 Is modem signal monitoring required for dev? [D=N] [Y/N]:
;
; If the line is connected to a modem for a dial-up switched circuit
; service, you should select modem monitoring. Modem signal monitoring
; checks the Carrier Detect signal (CD or CAR) for asynchronous lines.
;
; If these signals are missing for two consecutive samples, taken at one
; second intervals  the line will be declared "down" without waiting for
; a DECnet protocol to detect the failure.
;
; If your modem supports this signal, and you wish modem monitoring,
; answer the question YES.
;
• 04.06 Does the modem switch carrier with Request To Send? [D=N] [Y/N]:
;
; It is necessary to distinguish asynchronous line modems which present
; continuous carrier once the connection is established, such as the
; BELL 103 or BELL 212, from those which switch carrier along with
; Request To Send, such as the BELL 202.
;
; Answer the question YES if you are using a BELL 202 modem or the
; equivalent.
```

NETGEN displays Questions 4.05 and 4.06 only for asynchronous devices that support a modem, and for any user-written device drivers.

(continued on next page)

```
>* 04.07 Set the state for dev ON when loading the network? [D=N] [Y/N]
>;
>; If you answer this question YES, the DEV device driver (DDM) and all
>; necessary data bases will automatically be loaded into memory and the
>; state set to ON at network initialization time.
>;
>; If you want the state on during normal network operation, answering
>; this YES will save the NCP or VNP command required to set the state.
>; If dev is only to be used occasionally, answer NO.
>;
>; Note that the state may later be changed with CFE so that it will be
>; either ON or OFF at network initialization time.
```

NETGEN displays Question 4.07 for every line/circuit having enough information available (for example, CSR and vector) to enable the line/circuit. Answer this question YES if you want your lines/circuits enabled at network initialization time.

```
>* 05.00 Is dev multipoint? [D=N] [Y/N]:
>;
>; Answer this question YES only if the line is a master or slave port on
>; a multipoint line.
```

If you specify devices that support multipoint capabilities, NETGEN displays Question 5.00.

```
>* 05.01 Is dev the multipoint master? [D=N] [Y/N]:
>;
>; Answer this question YES if this line is the master, and NO if it is
>; a slave. The multipoint master is the station that controls the line
>; by polling the slave ports for activity.
```

NETGEN displays Question 5.02 if the device is a multipoint master.

```
>* 05.02 How many tributaries should dev poll? [D R:1.-32. D:8.]:
>;
>; Specify the number of tributaries to be connected to the multipoint
>; line. This is the number of tributaries which will be polled by the
>; master.
```

NETGEN displays Question 5.03 for each tributary the master supports.

```
>* 05.03 What is the tributary address for dev [D R:1.-255. D:def]:
>;
>; Specify the same tributary address which was specified when the
>; corresponding multipoint slave line on the other DECnet system was
>; generated. Each multipoint slave on a line should be identified by
>; a unique tributary address.
>;
>; Note that the tributary address may later be changed with CFE, NCP or
>; VNP.
```

NETGEN displays Question 5.04 if the device is a multipoint tributary.

```
>* 05.04 What is the tributary address of dev [D R:1.-255. D:def]:
>;
>; Specify the tributary address which is to identify this multipoint
>; slave to the multipoint master. Each multipoint slave should be
>; identified by a unique tributary address.
>;
>; Note that the tributary address may later be changed with CFE, NCP or
>; VNP.
```

(continued on next page)

Questions 5.05, 5.06, and 5.07 are displayed only if you specified a PCL device in Question 1.00.

```
>* 05.05 How many PCLs will communicate on the bus? [D R:1.-16. D:8.]:
>;
>; The PCL11B provides full duplex communication between a number of
>; systems on a parallel Time Division Multiplexed (TDM) bus.
>;
>; If this system is to be a full DECnet routing node, specify the
>; maximum number of PCLs which will communicate over this bus (no more
>; than 16). Include this PCL (PCL-x.z) in this number.
>;
>; If this system is to be a DECnet non-routing node, this number must
>; be "1".
>;
>* 05.06 What is the TDM bus address for the local PCL? [D R:1.-31. D:def]:
>;
>; Specify the address used by other PCLs to communicate with the local
>; PCL. This is its address on the Time Division Multiplexed (TDM) bus.
>; This address must be the same address that was set in the PCL hardware
>; during installation.
>;
>; PCL-x.z is always used to address the local PCL receiver. It can be
>; used to provide a built-in loopback capability.
>;
>* 05.07 What is the TDM bus address for PCL-x.z [D R:1.-31. D:def.]:
>;
>; Specify the address used by the local PCL to communicate with the
>; PCL on the other system. This is the PCL's address on the Time
>; Division Multiplexed (TDM) bus. This address must be the same address
>; that was set in the PCL's hardware during installation.
>;
```

Based on the value you specified in Question 5.05, Question 5.07 will be repeated appropriately.

```
>* 05.08 How many tributaries should DLM-x.y support? [D R:1.-32. D:1.]:
>;
>; The DLM allows your DECnet system to access remote DECnet systems
>; using a PSI circuit as the communications channel. It is implemented
>; as a multipoint line, where each tributary connects through a distinct
>; PSI circuit.
>;
>; For the number of tributaries, specify the number of DECnet systems
>; to which this system will connect using PSI circuits. For each DLM
>; controller, you may specify up to 32 tributaries. As it will require
>; a new NETGEN to change the number you specify you may wish to define
>; extra tributaries to use for future expansion.
```

NETGEN displays Questions 5.08 through 5.13 for DECnet/PSI systems, if you specified DLM in Question 1.00.

You need one tributary for each switched or permanent circuit. If you specified more than one DLM controller in Question 2.00, NETGEN displays this question for each controller, thus affecting the total number of tributaries you specify.

(continued on next page)

```
>* 05.09 Does DLM-x.y define a Switched Virtual Circuit (SVC) [D=N]? [Y/N]:
>;
>; A Switched Virtual Circuit (SVC) is an X.25 circuit which allows this
>; node to dynamically define the circuit destination to the Public
>; Packet Switching Network (PSN). An answer of NO will indicate that
>; the circuit is to be a Permanent Virtual Circuit (PVC), and that the
>; destination was permanently defined upon subscribing to the PSN.
```

All X.25 circuits must be either SVCs or PVCs.

NETGEN displays Questions 5.10 through 5.13 only if you specified a Switched Virtual Circuit in Question 5.09.

```
>* 05.10 Will DLM-x.y be used for incoming calls? [D=N] [Y/N]:
>;
>; An answer of YES indicates that this circuit will accept only incoming
>; calls. An answer of NO indicates that this circuit will be used only
>; to place outgoing calls.
>;
>; Note that this attribute may later be changed with CFE.
```

All SVC circuits in X.25 must be classified as incoming only or outgoing only to establish who places the call. Once established, circuits are full duplex.

```
>* 05.11 DTE Address which DLM-x.y calls? [D=none] [S R:0.-16.]:
>;
>; Specify the full address of the remote DTE to be called over this
>; circuit. The full address consists of from 1 to 16 hexadecimal
>; digits, and is comprised of the address which the Public Packet
>; Switching Network (PSN) assigned to the remote DTE when it subscribed
>; to the PSN, followed by the subaddress as defined by the remote DTE
>; system manager. The two are concatenated to form one string of
>; characters. The number of characters for each field will vary
>; depending upon the PSN and the requirements of the remote DECnet
>; node.
>;
>; Note that the address may later be changed with CFE.
```

NETGEN displays Question 5.11 only if you defined this circuit as an outgoing circuit in Question 5.10.

```
>* 05.12 Requested packet size for DLM-x.y? [D R:0.-1024. D:0.]:
>;
>; The packet size defines the size of the segment, in bytes, used to
>; communicate with the Public Packet Switching Network (PSN). This is
>; independent of the segment size used by DECnet Transport.
>;
>; If a packet size negotiation facility is available for this PSN and
>; if you have subscribed to it, you may specify any of the following
>; values:
>;         64, 128, 256, 512, 1024
>;
>; Transport will then request this value and negotiate with the PSN
>; when establishing the circuit. As a result of that negotiation, you
>; may or may not get the packet size requested.
>;
>; A value of 0 indicates that the packet size will not be negotiated
>; with the PSN, and the size used will be that agreed to when
>; subscribing to the PSN. This is usually the most satisfactory
>; answer.
>;
```

(continued on next page)

```
>; Note that the requested packet size may later be changed with CFE.
>;
>* 05.13 Requested window size for DLM-x.y? [D R:0.-7. D:0.]:
>;
>; The window size defines the maximum number of packets which may be
>; sent before an acknowlegement from the Public Packet Switching Network
>; (PSN) is required.
>;
>; If a window size negotiation facility is available for this PSN and
>; if you have subscribed to it, you may specify a value for the window
>; size in the range 1 to 7. Transport will then request this value and
>; negotiate with the PSN when establishing the circuit. As a result of
>; that negotiation, you may or may not get the window size requested.
>;
>; A value of 0 indicates that the window size will not be negotiated
>; with the PSN, and the size used will be that agreed to when
>; subscribing to the PSN. This is usually the most satisfactory
>; answer.
>;
>; Note that the requested window size may later be changed with CFE.
```

In most instances, 0 is the best answer here. If you do choose to negotiate a given window size, a higher window size increases throughput. If you have different window sizes for different circuits, performance of the circuits with a lower window size may suffer.

```
>; <EOS> Do you want to:
>*.       <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

4.5 Define the CEX System

This section defines the Communications Executive (CEX) and related components. Figure 4-4 illustrates the sequence of questions for defining the CEX system.

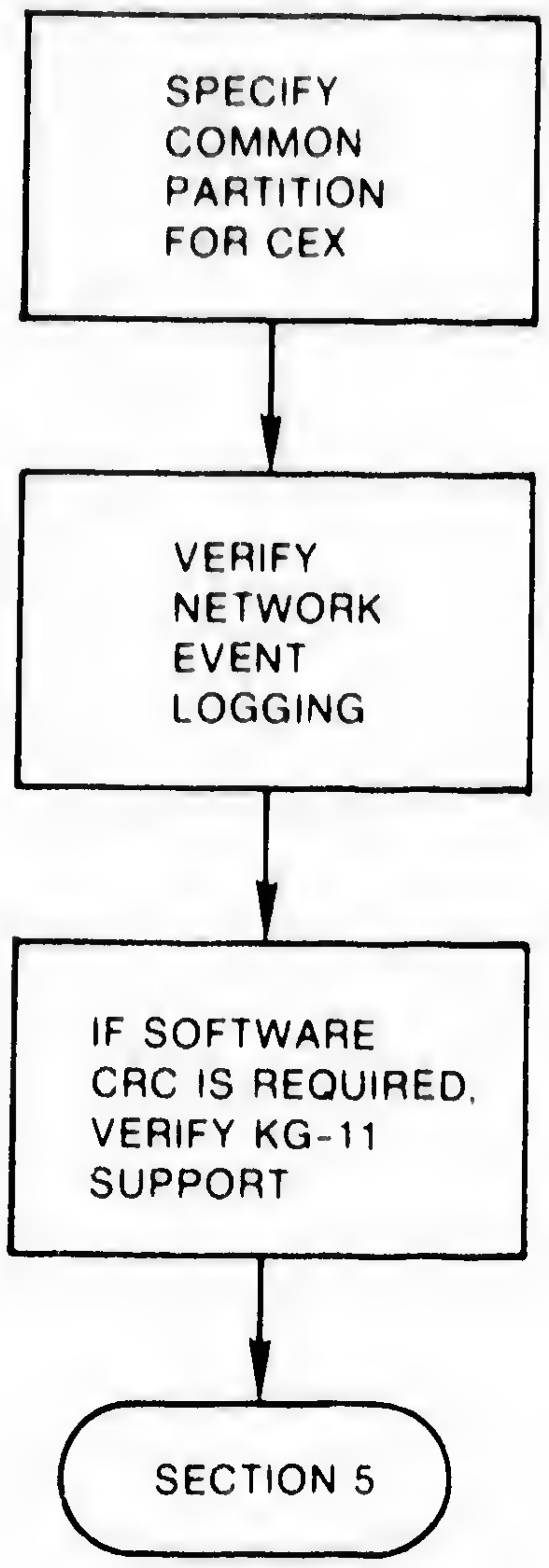
SPECIFY COMMON PARTITION FOR CEX
VERIFY NETWORK EVENT LOGGING
IF SOFTWARE CRC IS REQUIRED, VERIFY KG-11 SUPPORT
SECTION 5

Figure 4-4: NET — Section 4 — Define the CEX System

```
>; ==============================================================
>;  NET - Section 4 - Define the CEX System
>; ==============================================================
>;
>; Creating build files for CEX, the communications executive.
```

NETGEN displays Questions 1.00 and 1.01 for RSX-11M and RSX-11S systems only.

CEX is built for all systems, except in Component Mode. CEXPAR is the name of the system partition for CEX. This partition is created by using VMR commands after SYSGEN but before you load the system. For more information see Section 3.2.12.

```
>* 01.00 Base address for partition CEXPAR [O R:14000-range-top D:default]:
>;
>; Specify the base address for the CEX partition. This partition must
>; reside entirely within the target system's RSX Executive address space
>; (i.e. below 120000).
>;
>; Specifying range-top provides the minimum amount of space for the
>; CEX that supports the options that you have selected. Specifying
>; default provides enough space for the CEX which will be generated
>; for your system plus additional space to be used by CEX as a buffer pool.
>;
>; The space that is left over after CEX is loaded into the partition is
>; not wasted. This space will be used by CEX as a buffer pool. If CEX
>; needs more buffer pool space than can be accommodated by the CEX
>; partition, it will dynamically allocate space out of DSR.
```

Depending on the number of lines selected and the types of devices required for your system, the *range-top* displayed varies. This value will always reflect the base address required for the minimum partition size for your system.

The *default* displayed varies with the type of system. All systems are considered large unless they are DECnet only and have only one line, in which case they are considered small. The *default* values are:

Executive	**CEX Size**	**Values**
16K	Small	73500
16K	Large	73000
20K	Small	113500
20K	Large	113000

If you selected the *range-top* in Question 1.00, you will have just enough space for the smallest CEX that is legal for your system, and NETGEN will not display Question 1.01.

```
>* 01.01 Length of partition CEXPAR [O R:4000-max-length D:default]:
>;
>; Specify the length of the CEX partition. Specify max-length if the CEX
>; partition extends out to the end of the RSX Executive's address space.
>; This is generally advisable, since any extra space at the end of the
>; partition will be used by CEX as a buffer pool, and will not be
>; wasted.
```

(continued on next page)

The following statement applies only to RSX-11M-PLUS systems.

```
; Attempting to determine the value of $CEX in the RSX-11M-PLUS Exec.
;
; Space for CEX (the Communications Executive) was generated within the
; RSX-11M-PLUS Executive at address cex add.
```

NETGEN attempts to discover the value of $CEX, and then displays it. If it cannot determine the address, it displays the following message.

```
; The value of $CEX could not be determined. Please verify that the
; following files were correctly specified for your target system:
;
;       RSXMC.MAC
;
; NETGEN will exit now so you can correct the problem.
;
* 02.00 Do you want network event logging? [D=N] [Y/N]
;
; Answer the question YES if events detected by the network software are
; to be logged. These events will be logged on the console terminal
; unless logging is changed using CFE, NCP, or VNP.
;
; It is recommended that you answer this question YES in order to
; facilitate network fault detection/correction and network management.
```

NETGEN displays Question 2.00 only if you answered NO to Questions 9.00 and 10.00 in NET Section 1.

The following statement and Question 3.00 are displayed in Question and Answer Mode or Restore Mode, if you specified devices that require software DDCMP.

```
; Creating build files for STCRC, the CRC16 calculation routine.
;
* 03.00 Does the target system have a KG-11? [D=N] [Y/N]
;
; Answer the question YES only if the target system has the KG-11
; communications arithmetic option. The KG-11 option computes the
; cyclic redundancy check characters which are used by some CEX products
; for error detection in serially transmitted and received data. If you
; answer NO, a software algorithm will be used.
;
; Cyclic redundancy check (CRC-16) characters are used to verify the
; correctness of information transmitted across the network.
;
; Creating build files for CETAB, the CEX configuration tables.
```

The actual CETAB.MAC file is created in Section 8. The build files created here are used to assemble and build the CETAB.MAC file.

```
; Creating build files for the DDMs, the device driver modules.
```

The Device Driver Modules are defined in NET Section 3.

```
; <EOS>  Do you want to:
*        <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

4.6 Define the Communications Executive Support Components

This section defines the support components: NTINIT, NTL, KMCL, MLD and EVL/EVC. Figure 4-5 illustrates the sequence of questions for defining the Communications Executive support components.

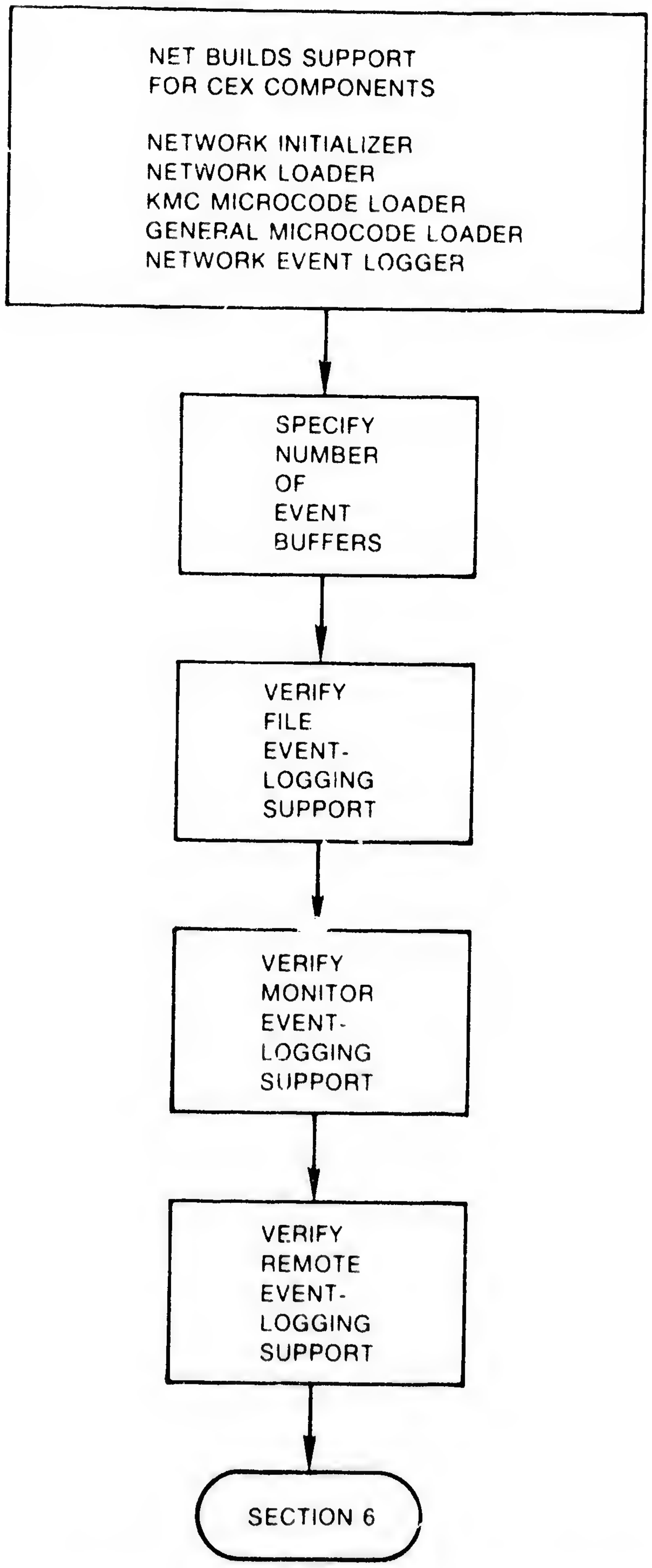

Figure 4–5: NET — Section 5 — Define the Comm Exec Support Components.

```
>; ==================================================================
>;  NET - Section 5 - Define the Comm Exec Support Components
>; ==================================================================
>;
>* 01.00 Do you want any of the Support Components? [D=N] [Y/N]:
>;
>; The Communications Executive Support Components are:
>;
>;       NTINIT  - The network initializer.
>;       NTL     - The network loader.
>;       KMCL    - The KMC microcode loader.
>;       MLD     - The general microcode loader.
>;       EVL/EVC - The event logger and collector.
>;
>; If you answer YES to this question, you will be asked about each
>; component individually. In general, you should only answer YES when
>; there is a clear reason to build or rebuild one or more of these
>; components.
```

NETGEN displays Question 1.00 only in Component Mode. If you answer NO, you immediately jump to the end-of-section (EOS) question.

You should answer YES only when there is a definite reason to build or rebuild one of the components, for example, to add components not originally selected or to build a patched version of a component.

The following statement is displayed in Question and Answer Mode. Question 2.00 is displayed in Component Mode.

```
>; Creating build files for NTINIT, the network initializer.
>;
>* 02.00 Do you want NTINIT? [D=N] [Y/N]:
>;
>; NTINIT is the network initialization task. It is responsible for
>; performing all initialization which is required before the network is
>; started.
>;
>; If you wish to rebuild NTINIT, answer this question YES, otherwise
>; answer NO.
>;
```

In Question and Answer Mode or Restore Mode, NTINIT is always built. In Component Mode, rebuilding NTINIT is optional.

The following statement is displayed in Question and Answer Mode. Question 3.00 is displayed in Component Mode.

```
>; Creating build files for NTL, the network loader.
>;
>* 03.00 Do you want NTL? [D=N] [Y/N]:
>;
>; NTL is the network loader task. It is responsible for loading and
>; unloading the Comm Exec and all of the processes.
>;
>; If you wish to rebuild NTL, answer this question YES, otherwise answer
>; NO.
```

(continued on next page)

In Question and Answer Mode or Restore Mode, NTL is built for RSX-11M/M-PLUS systems. In Component Mode, rebuilding NTL is optional. NTL is never built for an RSX-11S system.

The following statement is displayed in Question and Answer Mode. Question 4.00 is displayed in Component Mode.

```
>; Creating build files for KMCL, the KMC microcode loader.
>;
>* 04.00 Do you want KMCL? [D=N] [Y/N]:
>;
>; KMCL is the KMC microcode loader. It is responsible for loading all
>; KMC devices with the proper microcode.
>;
>; If your target system has KMC devices in its configuration, and you
>; wish to generate a new version of the KMC loader, then answer this
>; question YES.
>;
>; If your target system has no KMC devices in its configuration, answer
>; this question NO.
```

In Question and Answer Mode, KMCL is built for RSX-11M/M-PLUS systems with a KMC or KMS device and powerfail recovery support, or for any RSX-11S system with a KMC or KMS device.

NETGEN always displays Question 4.00 in Component Mode because it does not know if you have a KMC or KMS device.

The following statement is displayed in Question and Answer Mode. Question 5.00 is displayed in Component Mode.

```
>; Creating build files for MLD, the general microcode loader.
>;
>* 05.00 Do you want MLD? [D=N] [Y/N]:
>;
>; MLD is the general microcode loader. It is responsible for loading
>; UNA devices with the proper microcode.
>;
>; If your target system has UNA devices in its configuration, and you
>; wish to generate a new version of the general microcode loader, then
>; answer this question YES.
>;
>; If your target system has no UNA devices in its configuration, answer
>; this question NO.
```

If you specified a device requiring microcode to be loaded, NETGEN displays Question 5.00 for RSX-11M/-11M-PLUS/-11S. This does not include KMC or KMS devices.

(continued on next page)

The following statement is displayed in Question and Answer Mode and Restore Mode if you specified event logging in Section 4 Question 2.00.

Question 6.00 is displayed in Component Mode.

```
>; Creating build files for EVL/EVC, the event logger and collector.
>;
>* 06.00 Do you want EVL/EVC? [D=N] [Y/N]:
>;
>; EVL is the event logging process. It is responsible for detecting
>; those events which are to be logged, and recording them.
>;
>; EVC is the event collecting task. It is responsible for collecting
>; the events logged by EVL, and for sending them to the appropriate
>; sinks.
>;
>; If your target system was generated with event logging, and you wish
>; to generate new versions of EVL and EVC, then answer this question
>; YES.
>;
>; If your target system was not generated with event logging, answer
>; this question NO.
```

In Question and Answer Mode or Restore Mode, EVL and EVC are always built if you specified event logging in Section 4, Question 2.00. You cannot add EVL and EVC in Component Mode if you did not specify event logging in the original NETGEN. You can rebuild EVL/EVC in Component Mode if they were built in the original gen.

```
>* 06.01 How many Event Buffers should EVL use? [D R:4.-50. D:6.]:
>;
>; The Event Logger Process (EVL) must be built with some number of
>; internal event buffers which will be used to hold events detected by
>; the Network. If events occur often enough so that there are sometimes
>; more concurrent events than there are event buffers, some of the event
>; information will be lost.
>;
>; EVL may be rebuilt at a later time with more event buffers by
>; performing a Component Generation.
>;
>* 06.02 Should EVC support file event logging? [D=N] [Y/N]:
>;
>; If you answer this question YES, EVC will support the ability to
>; append event records to an event logging file.
>;
>; If you answer NO, events will not be logged to a file.
>;
>; This support may be changed at a later time by performing a Component
>; Generation.
>;
```

(continued on next page)

```
>* 06.03 Should EVC support monitor event logging? [D=N] [Y/N]:
>;
>; If you answer this question YES, EVC will support the ability to
>; send event records to a user written task.
>;
>; If you answer NO, events will not be logged to a user task.
>;
>; This support may be changed at a later time by performing a Component
>; Generation.
>;
>* 06.04 Should EVC support remote event logging? [D=N] [Y/N]:
>;
>; If you answer this question YES, EVC will support the ability to
>; send event records to an Event Receiver task on a remote node.
>;
>; If you answer NO, events will not be logged to remote nodes.
>;
>; This support may be changed at a later time by performing a Component
>; Generation.
>;
>; <EOS>  Do you want to:
>*          <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

4.7 Define the System Management Utilities

This section defines the system management utilities: NCP, NMDRV, NMVACP, CFE, NDA, and VNP. Figure 4–6 illustrates the sequence of questions for defining the system management utilities.

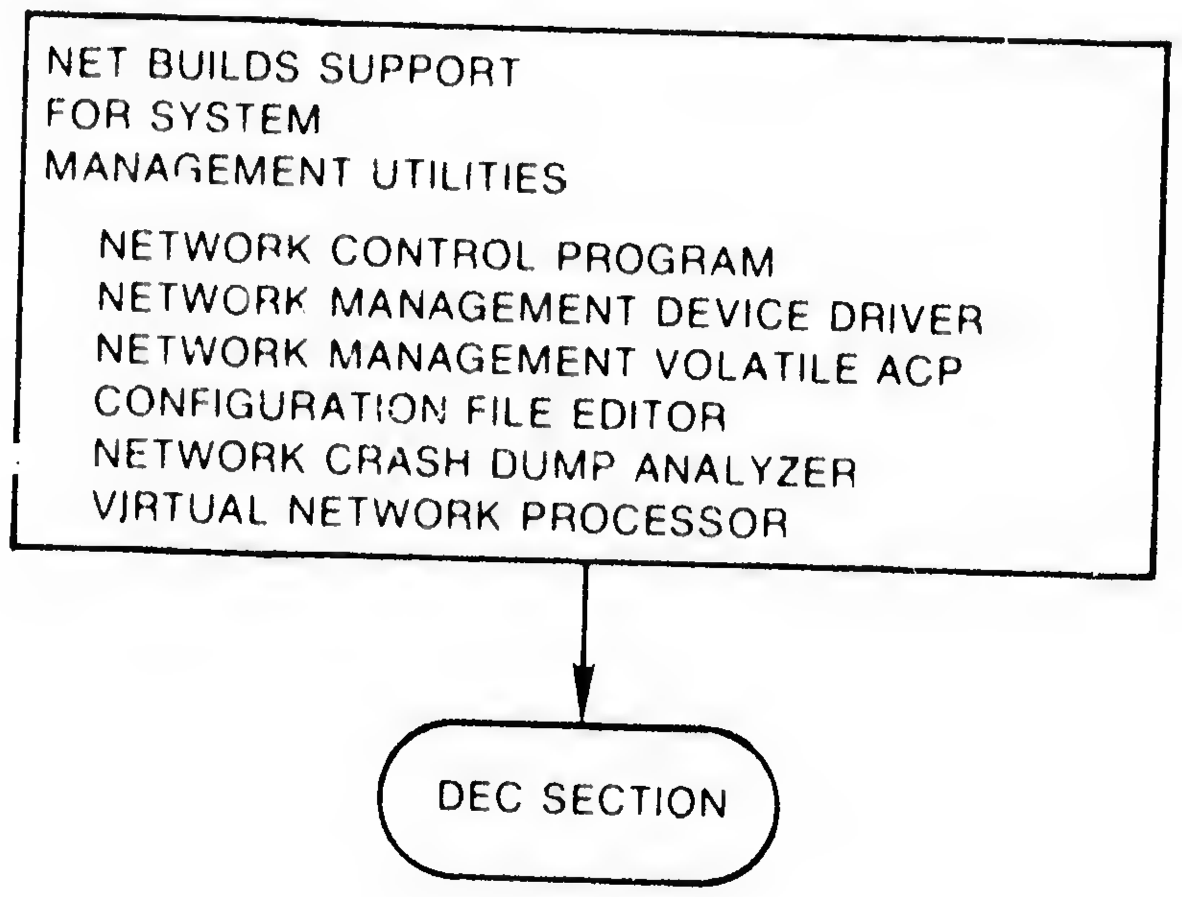
NET BUILDS SUPPORT FOR SYSTEM MANAGEMENT UTILITIES
NETWORK CONTROL PROGRAM
NETWORK MANAGEMENT DEVICE DRIVER
NETWORK MANAGEMENT VOLATILE ACP
CONFIGURATION FILE EDITOR
NETWORK CRASH DUMP ANALYZER
VIRTUAL NETWORK PROCESSOR
DEC SECTION

Figure 4–6: NET — Section 6 — Define the System Management Utilities

```
; ==========================================================
;  NET - Section 6 - Define the System Management Utilities
; ==========================================================
;
* 01.00 Do you want any of the System Management Utilities? [D=N] [Y/N]:
;
; The System Management Utilities are:
;
;       NCP      - The network control program.
;       NMDRV    - The network management driver.
;       NMVACP   - The network management ACP.
;       CFE      - The configuration file editor.
;       NDA      - The network dump analyzer.
;       VNP      - The virtual network control program.
;
; If you answer YES to this question, you will be asked about each
; component individually. In general, you should only answer YES when
; there is a clear reason to build or rebuild one or more of these
; components.
```

NETGEN displays Question 1.00 only in Component Mode. If you answer NO, you immediately jump to the end-of-section (EOS) question.

The following statement is displayed in Question and Answer Mode. Question 2.00 is displayed in Component Mode.

```
; Creating build files for NCP, the network control program.
;
* 02.00 Do you want NCP? [D=N] [Y/N]:
;
; NCP is the network control program. It allows the system manager to
; perform all on-line network management functions.
;
; If you wish to rebuild NCP, answer this question YES, otherwise answer
; NO.
```

In Question and Answer Mode or Restore Mode, NCP is required for RSX-11M/M-PLUS systems. For RSX-11S systems, it is optional.

In Component Mode, rebuilding NCP is optional.

The following statement is displayed in Question and Answer Mode. Question 3.00 is displayed in Component Mode.

```
; Creating build files for NMVACP and NMDRV, the Network Management
; Volatile ACP and driver.
;
* 03.00 Do you want NMVACP and NMDRV? [D=N] [Y/N]:
;
; NMVACP and NMDRV are the Network Management Volatile ACP and its
; associated driver. They are responsible for performing many of the
; operations required by the various NCP commands.
;
; If you wish to generate a new version of NMVACP and NMDRV, answer the
; question YES.
```

(continued on next page)

In Question and Answer Mode or Restore Mode, NMVACP and NMDRV are required for RSX-11M/M-PLUS systems. In Component Mode, NMVACP and NMDRV are optional.

For RSX-11S systems, NMDRV is built only if you have specified event logging; NMVACP is never built.

The following statement is displayed in Question and Answer Mode. Question 4.00 is displayed in Component Mode.

```
>; Creating build files for CFE, the configuration file editor.
>;
>* 04.00 Do you want CFE? [D=N] [Y/N]:
>;
>; CFE is the configuration file editor. It allows the system manager to
>; make changes to the network's permanent data base (CETAB.MAC).
>;
>; If you wish to rebuild CFE, answer this question YES, otherwise answer
>; NO.
```

In Question and Answer Mode or Restore Mode, CFE is required for all systems. In Component Mode, rebuilding CFE is optional.

The following statement is displayed in Question and Answer Mode. Question 5.00 is displayed in Component Mode.

```
>; Creating build files for NDA, the network dump analyzer.
>;
>* 05.00 Do you want NDA? [D=N] [Y/N]:
>;
>; NDA is the network dump analysis program. It provides the system
>; manager with a tool which can analyze a system crash dump and print
>; the network data bases in a user readable format in much the same way
>; the RSX crash dump analyzer (CDA) does for the system data bases.
>;
>; If you wish to rebuild NDA, answer this question YES, otherwise answer
>; NO.
```

In Question and Answer Mode or Restore Mode, NDA is required for all systems. In Component Mode, rebuilding NDA is optional.

The following statement is displayed in Question and Answer Mode. Question 6.00 is displayed in Component Mode.

```
>; Creating build files for VNP, the virtual network control program.
>;
>* 06.00 Do you want VNP? [D=N] [Y/N]:
>;
>; VNP is the virtual network control program. It allows the system
>; manager to perform network management functions on a system image
>; file, rather than on the running system.
>;
>; If you wish to rebuild VNP, answer this question YES, otherwise answer
>; NO.
```

In Question and Answer Mode or Restore Mode, VNP is required for RSX-11S systems. For RSX-11M systems, VNP is optional. For RSX-11M-PLUS systems, VNP is never built.

```
>; <EOS>  Do you want to:
>*        <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

4.8 Define the CEX Products

This section displays questions that are specific to DECnet and PSI if you are including PSI components in your DEcnet system.

```
>; ==============================================================
>;  NET - Section 7 - Define the CEX Products
>; ==============================================================
>;
>; Questions concerning the following CEX Products will now be asked.
>;
>;      DECnet
>;      PSI
```

At this point, network generation continues with the text for the DEC portion of NETGEN (Chapter 5), followed by the PSI portion of NETGEN (Chapter 6) if you have purchased a PSI license. After completion of these two procedures, NETGEN continues with NET Section 8, Complete the CEX System Definitions.

4.9 Complete the CEX System Definitions

This section defines the Direct Line Access (DLX) process, and creates the CETAB.MAC file. Figure 4-7 illustrates the sequence of questions for completing the CEX system definitions.

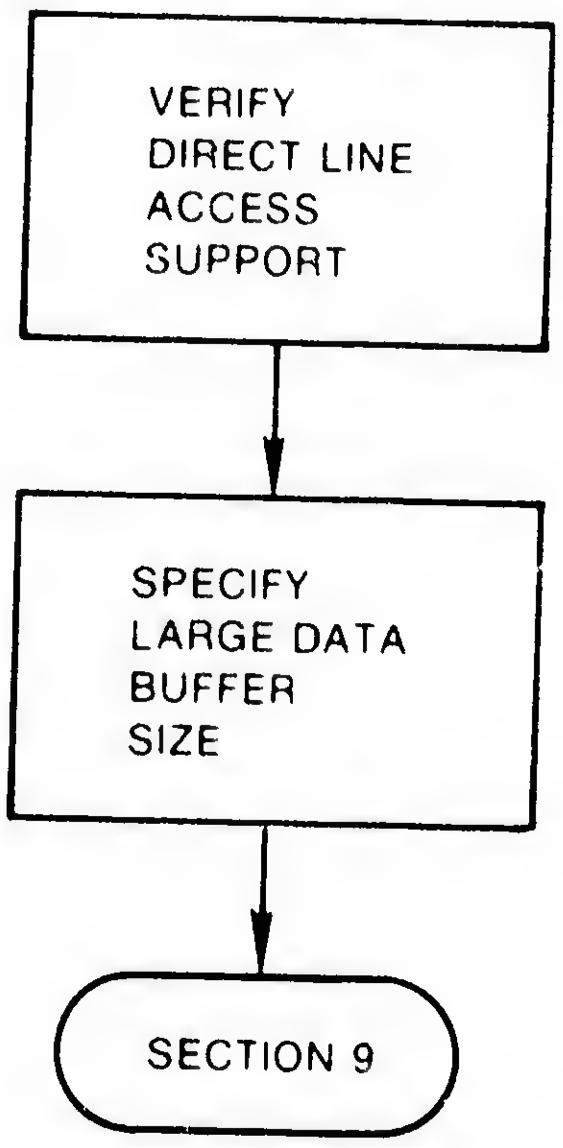
VERIFY DIRECT LINE ACCESS SUPPORT
SPECIFY LARGE DATA BUFFER SIZE
SECTION 9

Figure 4-7: NET — Section 8 — Complete the CEX System Definitions

```
>; ===================================================================
>;  NET - Section 8 - Complete the CEX System Definitions
>; ===================================================================
>;
>; Creating build files for DLX, the Direct Line Access process.
```

If you have selected components that require DLX, the above statement is displayed in Question and Answer Mode or Restore Mode.

If none of the components you selected require DLX, NETGEN displays Question 1.00 in Question and Answer Mode. It is always displayed in Component Mode.

```
>* 01.00 Do you want DLX? [D=N] [Y/N]:
>;
>; DLX, the Direct Line Access controller, provides a user interface to
>; lines at the data link level. This is required for any services
>; which must bypass the normal network data channels.
>;
>; For DECnet, such services include down-line system loading, up-line system
>; dumping, and NCP line loop tests. There is also a user QIO interface
>; which allows user tasks to access lines via the data link protocol
>; (usually DDCMP).
>;
>; If no such services have been selected during this generation, but you
>; plan on adding these services at a later date by performing a
>; Component mode generation, you must select DLX for your system now.
>;
>* 02.00 What is the Large Data Buffer (LDB) size? [D R:192.-1484. D:292.]:
>;
>; Large Data Buffers (LDBs) are used to transmit and receive messages
>; across the network. The LDB size determines the largest segment which
>; can be transmitted or received. This does not affect the size of the
>; largest user data transfer request, but it can affect performance.
>;
>; Specify the size of the Large Data Buffers (LDBs) as a number of
>; bytes. The size chosen for LDBs should be the same throughout the
>; network.
>;
>; A size of 292 is large enough for all normal network traffic.
```

The default for this question is usually 292. The default provides satisfactory performance for normal network traffic. A value of 292 accommodates 1/2 disk block (256 bytes) of user data. This allows space for data and DECnet protocols. For systems that have a high volume of file transfers, a size of 548 allows a full disk block (512 bytes) to be transferred at a time.

The following factors can affect optimum LDB size:

- Large LDBs are good for bulk data transfers, providing you have sufficient available memory.
- Large LDBs have a higher probability of an error due to line noise for a given packet, and longer retransmission times. For high speed lines, this may not be significant.
- If you choose to have large LDBs for efficient file transfers, you may only have a small number of buffers, depending on the amount of memory available. Consequently, processes may have to wait for buffers.

```
>;  EOS>  Do you want to:
>*         <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

4.10 Build the CEX System

This section actually builds the system you have specified. It is repeated three times, once each for NET, DEC, and PSI. If all object kits were placed on the NETGEN disk during PREGEN, this section proceeds to completion without user intervention.

```
>; ============================================================
>;  NET - Section 9 - Build the CEX System at time on date
>; ============================================================
>;
>; All questions have now been asked and the selected components will now
>; be built. This may take from one to three hours, depending on the
>; selection of components and the system you are running on.
```

If an operator's presence is required to switch disks during the build process, NETGEN displays the following statement.

```
>; Note that the NETGEN disk does not contain all of the required object
>; files. An operator must be present to mount each object disk as it
>; is required.
>;
>* 01.00 Network object disk device? [dduu: D=def] [S]:
>;
>; Specify the disk drive where the object disk is loaded. This may be
>; the same drive as is used for the NETGEN disk, or it may be a
>; different drive.
>;
>; If the disk has not yet been mounted, NETGEN will mount it. If
>; another disk is currently mounted in the drive, that disk will be
>; dismounted.
>:
>; This disk must contain the Network objects.
```

If you plan to use a disk drive on which another disk is mounted, do not replace the disk until you have answered Question 1.00. If the second disk is spun up before you answer Question 1.00, problems will result. After you answer Question 1.00, NETGEN displays the following statement.

```
>; Dismounting device. Please remove the disk and replace it with the
>; proper Network object disk.
>;
>* 01.01 Is device ready? [D=N] [Y/N]:
>;
>; Load the disk into drive device and start the drive before answering
>; YES to this question.
```

If the *device* has not been mounted, NETGEN displays Question 01.02.

```
>* 01.02 Label for device? [D=default label] [S R:0-12]:
>;
>; Specify the label to be used when mounting device. If the disk was
>; an object disk created by PREGEN to hold only the Network objects, the
>; label will be default. If not, the label will have been user defined.
>;
>; Mounting device.
```

NETGEN now mounts the *device* specified. Where *Network* is shown, NETGEN displays either Network, DECnet, or PSI.

4.11 Generation Clean-up

This section performs final NETGEN processing.

```
>; ==============================================================
>;  NET - Section 10 - Generation Clean-up
>; ==============================================================
>;
>; Creating NETCFG.TXT, the network configuration description file.
>; Creating NETCFE.CMD, the network configuration command file.
>; Creating NETINS.CMD, the network installation command file.
>;
>; ==============================================================
>;  NET - RSX-11M/S/M-PLUS CEX System Generation Procedure
>;        Stopped at time on date
>; ==============================================================
```

Chapter 5

NETGEN Dialog: DEC

5.1 Define the Target and Remote Nodes

DEC is the second part of the NETGEN dialog. NETGEN displays a series of questions relating to DECnet components immediately following NET Section 7. Figure 5-1 illustrates the sequence of questions for defining the target and remote nodes.

The DEC dialog represents the text NETGEN displays when performing an initial generation in Question and Answer Mode. A Component Mode or a Restore Mode generation sometimes displays a slight variation in the wording of specific questions. For example, the defaults sometimes vary from those displayed in this dialog. Your responses should always be guided by the question and text displayed on your terminal.

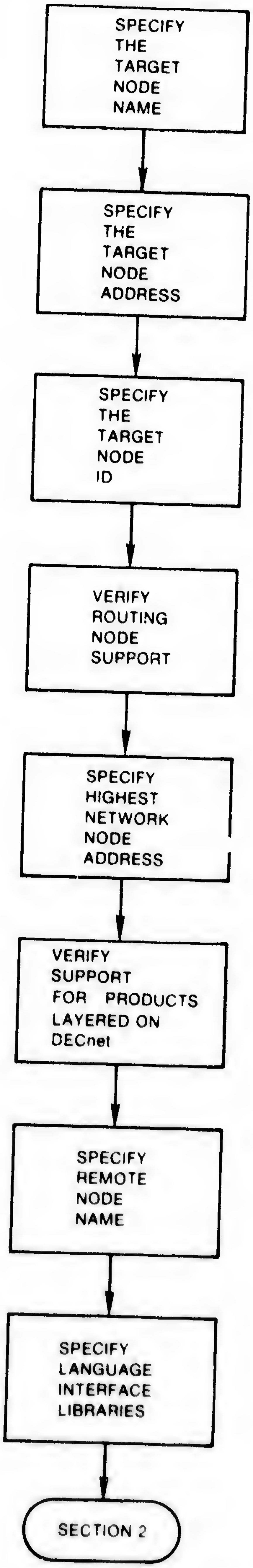
SPECIFY THE TARGET NODE NAME
SPECIFY THE TARGET NODE ADDRESS
SPECIFY THE TARGET NODE ID
VERIFY ROUTING NODE SUPPORT
SPECIFY HIGHEST NETWORK NODE ADDRESS
VERIFY SUPPORT FOR PRODUCTS LAYERED ON DECnet
SPECIFY REMOTE NODE NAME
SPECIFY LANGUAGE INTERFACE LIBRARIES
SECTION 2

Figure 5–1: DEC – Section 1 – Define the Target and Remote Nodes

```
>; ==============================================================
>;  DEC - DECnet CEX Product Generation Procedure
>;         Starting questions at time on date
>; ==============================================================
>;
>; Copyright (C) 1983 by
>; Digital Equipment Corporation, Maynard, Mass.
>;
>; Generate the DECnet CEX Product for your RSX-11M/S/M-PLUS target
>; system.
>;
>; ==============================================================
>;  DEC - Section  1 - Define the Target and Remote Nodes
>; ==============================================================
```

If you are in Component mode, NETGEN displays the following statement and then displays Question 6.00.

```
>; dduu:[x,54]CETAB.MAC is being scanned to define your target node.
```

NOTE

To change most parameters defined in this section, you must use NCP, VNP, or CFE. You can do a Component Mode generation to change the parameters defined in Questions 6.00 and 8.00. To change parameters defined in Question 4.00, you must do a complete new generation or a Restore Mode generation.

```
>* 01.00 What is the target node name? [S R:0-6]:
>;
>; Enter the node name for the DECnet node being generated. This must be
>; 1 to 6 alphanumeric characters, at least one of which must be an
>; alphabetic (A-Z).
>;
>; Although it is not required, it is highly recommended that this name
>; be used by all other nodes in the network to identify this node.
>* 02.00 What is the target node address? [D R:1.-1023.]
>;
>; Enter the node address for the node being generated. This must be a
>; number in the range 1 to 1023.
>;
>; This number will be the identification for this node within the
>; network, and must be unique among all of the nodes in the network.
>;
>; More efficient operation can be obtained by setting the addresses of
>; the nodes in the network in the range 1 to the number of nodes. The
>; highest node address would then be equal to the number of nodes in the
>; network.
>;
>* 03.00 Target node ID? [D=None] [S R:0.-32.]:
>;
>; Enter the ID string for the node being generated. This string may be
>; from 0 to 32 characters. Note that this string must not contain any
>; single-quote ('), double-quote (") or comma (,) characters.
>;
>; The node ID may be any arbitrary string which is useful in identifying
>; the node.
```

(continued on next page)

The node ID is local to the current node and is not passed on to other nodes via routing messages.

If you have purchased a full function DECnet kit, NETGEN displays Question 4.00 in Question and Answer Mode. This question is not displayed in Component Mode.

```
>* 04.00 Do you want to generate a routing node? [D=N]:
>;
>; A routing node maintains full routing data bases and sends and
>; receives routing messages. It can support multiple DECnet lines and
>; circuits.
>;
>; A non-routing node can provide access to a routing network through an
>; adjacent routing node while maintaining no routing data bases of its
>; own. Because it does not maintain any routing data bases and does not
>; send or receive routing messages, it requires fewer system resources.
>;
>; In order to generate a non-routing node, the following restrictions
>; must be adhered to.
>;
>; Only one DECnet line may be generated.
>; If the line is multipoint, there is only one drop.
>;
>; Answer this question YES if you wish to generate a full routing node,
>; and NO if you wish to generate a non-routing node.
```

NETGEN displays Question 5.00 if you specified a routing node.

```
>* 05.00 Highest node address in the network [D R:n.-1023. D:n.]:
>;
>; Enter the highest node address used by any node in the network. This
>; number affects the size of the internal routing data base used by this
>; node. It also controls the size of the routing messages exchanged
>; between nodes.
>;
>; More efficient operation can be obtained by setting the addresses of
>; the nodes in the network in the range 1 to the number of nodes. The
>; highest node address would then be equal to the number of nodes in the
>; network.
>;
>; You may wish to make the highest node address slightly greater than
>; the number of nodes in the network, to allow for expansion of the
>; network.
>;
>; Note that all nodes in the network should use the same value for the
>; highest node address.
```

In Question 5.00, *n* is the node number specified in Question 2.00.

NETGEN always displays the following statement, and displays Question 6.00 in Question and Answer Mode. If you included extended network support, NETGEN will not display Question 6.00 in Component Mode.

(continued on next page)

```
>; To include support for remote terminals and products layered on DECnet
>; you must first include the required extended network support.
>;
>* 06.00 Do you want to include this extended network support? [D=Y]:
>;
>; Answer this question YES, to include the extended network support for the
>; following options:
>;
>;    - Network Command Terminal server (NCT)
>;    - Remote Network Command Terminal host support (RTH)
>;    - Products layered on DECnet:
>;       - X.25 Gateway Access
>;       - SNA Gateway Access
>;
>; If you do not include the extended network support, you will not be able
>; to include these features in your network. Including this support will
>; cause ECL and NETACP to increase in size by a total of 1300. words.
>;
>; You may add the extended network support later by performing a Component
>; Mode generation.
>;
>* 7.00 Remote node name? [<RET>=Done] [S R:0-6]:
>;
>; You may, at this time, define a series of node names which correspond
>; to nodes in your network. When the network is loaded, these node
>; names will automatically be set. Enter a carriage return when you
 ; have no more remote node names to define.
>;
>; Each node name will be assigned to a node address. Standard procedure
>; is to start with the node name for the lowest node address used, and
 ; to progress from there to the highest node address.
 ;
 ; It is recommended that each node in the network assign the same node
 ; name to each individual node, reducing the confusion of moving from
 ; node to node.
 ;
 ; Remote node names may be added or deleted using NCP, VNP, or CFE.
```

Questions 7.00 and 7.01 are repeated until you indicate you are done by pressing RET.

```
* 07.01 Remote node address? [D R:1.-max-node address. D:def.]:
;
; Enter the node address that node-name has been assigned in the network.
;
; Each node address defines a unique node in the network, and must be
; assigned when the network is first set up.
```

The variable, *node-name*, is the name specified in Question 6.00; the *max-node address* is the value specified in Question 5.00. The default node address, *def*, is always the next legal node number in sequence from the last number specified.

(continued on next page)

```
>* 08.00 Do you want the language interface libraries? [D=N] [Y/N]:
>;
>; The MACRO user interface allows user written MACRO-11 tasks to
>; interface to the DECnet software. The MACRO user library contains the
>; macros which a programmer may use to code these tasks.
>;
>; The FORTRAN/COBOL/BASIC+2 object library allows user tasks written in
>; these high level languages to interface to the DECnet software. The
>; object library contains the user interface routines and the Network
>; File Access Routines (NFARS).
>;
>; If you will be writing DECnet application programs that require
>; either of these libraries, answer this question YES.
```

If you specified the language libraries in Question 8.00 and did not choose Dry Run Mode, NETGEN displays the following statements. The variable, *dduu:*, is your target disk.

```
>; The DECnet MACRO user library will be placed on your target disk
>; as "dduu:[1,1]NETLIB.MLB".
>;
>; The DECnet FORTRAN/COBOL/BASIC+2 object library will be placed on your
>; target disk as "dduu:[1,1]NETFOR.OLB".
>;
>; If necessary, please move them to the library disk (LB:) on your
>; target system, if this is different from your target disk (dduu:).
>;
>; <EOS> Do you want to:
>*       <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

5.2 Define the DECnet Communications Components

This section defines the DECnet communications components. These components include: XPT, RCP, ECL, NETACP, DCP, and EPM. Figure 5–2 illustrates the sequence of questions for defining the DECnet Communications Components.

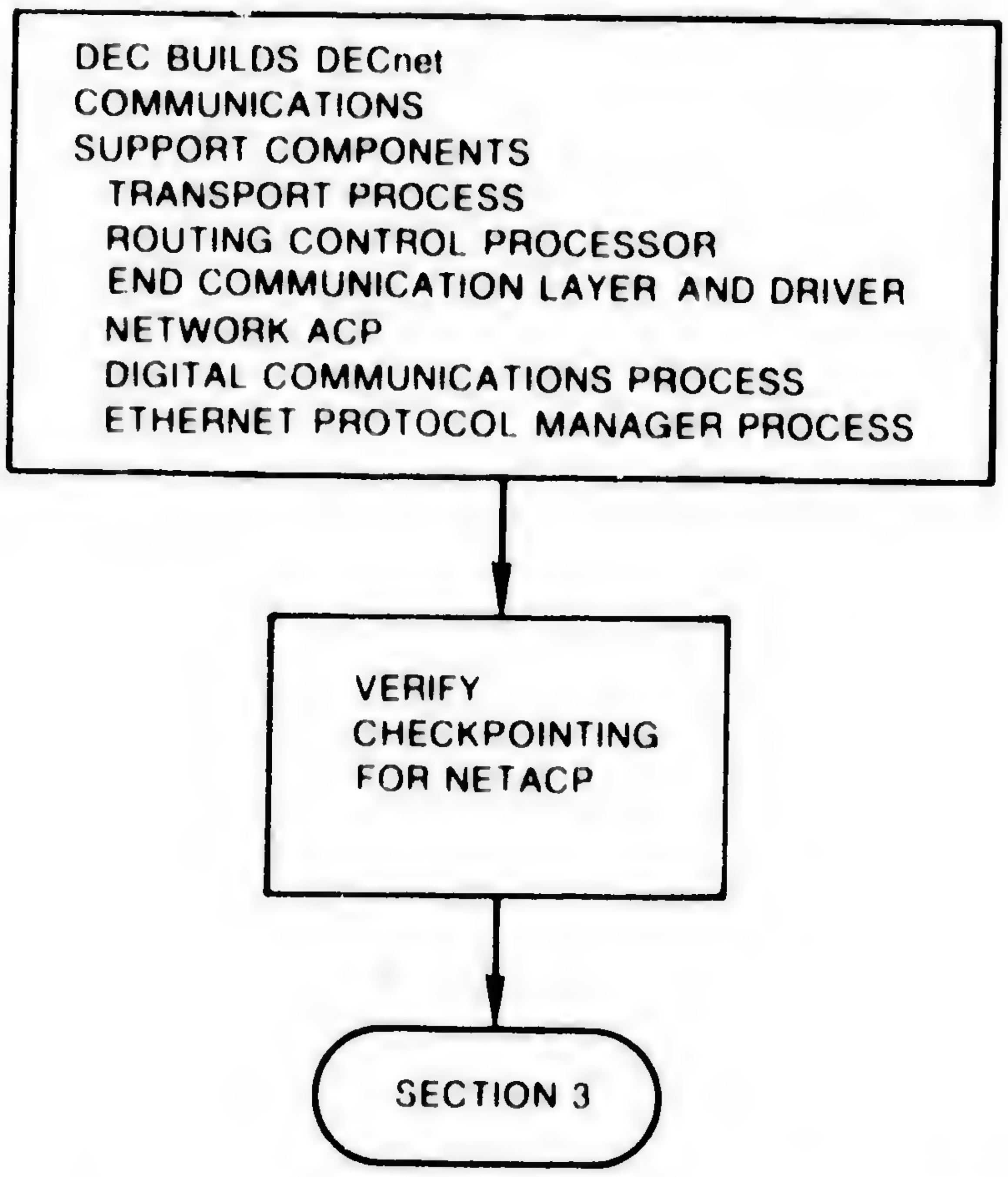
DEC BUILDS DECnet
COMMUNICATIONS
SUPPORT COMPONENTS
TRANSPORT PROCESS
ROUTING CONTROL PROCESSOR
END COMMUNICATION LAYER AND DRIVER
NETWORK ACP
DIGITAL COMMUNICATIONS PROCESS
ETHERNET PROTOCOL MANAGER PROCESS
VERIFY
CHECKPOINTING
FOR NETACP
SECTION 3

Figure 5–2: DEC – Section 2 – Define the DECnet Communications Components

```
; =========================================================================
; DEC - Section 2 - Define the DECnet Communications Components
; =========================================================================
;
* 01.00 Do you want any of the Communications Components? [D=N] [Y/N]:
;
; The DECnet Communications Components are:
;
;        XPT        - The transport process
;        RCP        - The routing event processing task
;        ECL        - The end communication layer and driver.
;        NETACP     - The network services ACP.
;        DCP        - The DDCMP line protocol process.
;        EPM        - The Ethernet protocol manager process.
;
; If you answer YES to this question, you will be asked about each
; component individually. In general, you should only answer YES when
; there is a clear reason to build or rebuild one or more of these
; components.
```

NETGEN displays Question 1.00 only in Component Mode. If you answer NO, you will immediately jump to the end-of-section (EOS) question with one exception. NETGEN displays the following statement if you did not select extended network support in a previous generation and you are now selecting it in Component Mode.

```
; ECL and NETACP will be rebuilt to add the extended network support for
; remote terminals and products layered on DECnet.
```

The following statement is displayed in Question and Answer Mode. Question 2.00 is displayed in Component Mode.

```
; Creating build files for XPT, the transport process.
;
* 02.00 Do you want XPT? [D=N] [Y/N]:
;
; XPT is the transport process. It is responsible for transmitting and
; receiving packets from/to the local node and forwarding route through
; packets.
;
; If you wish to rebuild XPT, answer this question YES, otherwise answer
; NO.
```

If the node being generated is a routing node, the following statement is displayed whenever XPT is built or rebuilt. If you have generated a routing node and you are not rebuilding XPT, Question 3.00 is displayed in Component Mode.

```
; Creating build files for RCP, the routing event processing task.
;
* 03.00 Do you want RCP? [D=N] [Y/N]:
;
; RCP is the routing event processing task. It is responsible for
; managing the routing data base and for switching circuits between the
; ECL and DLX processes for automatic service requests.
;
; If you wish to build RCP, answer this question YES, otherwise answer
; NO.
```

(continued on next page)

The following statement is displayed in Question and Answer Mode. Question 4.00 is displayed in Component Mode.

```
; Creating build files for ECL, the network services process and driver.
;
* 04.00 Do you want ECL? [D=N] [Y/N]:
;
; ECL is the end communication layer and driver. It is responsible for
; all of the time critical network activities, and for handling all user
; task QIOs. When loaded, it appears to the CEX system as a process,
; and to the RSX system as a device (NS:) which can accept QIO
; requests.
;
; If you wish to rebuild ECL, answer this question YES, otherwise answer
; NO.
```

The following statement is displayed in Question and Answer Mode, and in Component Mode if you have chosen to rebuild ECL or XPT. Question 5.00 is displayed in Component Mode only if NETACP is not being automatically rebuilt for you.

```
; Creating build files for NETACP, the network services ACP.
;
* 05.00 Do you want NETACP? [D=N] [Y/N]:
;
; NETACP is the network services ancillary control process. It is
; responsible for performing all of the less time critical network
; activities. NETACP works in conjunction with the ECL process/driver.
;
; If you wish to rebuild NETACP, answer this question YES, otherwise
; answer NO.
;
* 05.01 Should NETACP be checkpointable? [D=N] [Y/N]:
;
; Making NETACP checkpointable will allow it to share partition space
; with other tasks. Checkpointing will increase the amount of time required
; for connect and disconnect processing.
;
; If your target system is small (below 80k words) then it is advisable
; to install NETACP in the same partition as F11ACP. In this case,
; NETACP must be made checkpointable.
;
; In medium to large target systems (above 80k words), NETACP may be installed
; either alone in its own partition or in a system controlled partition such
; as GEN. In either case, NETACP should be made non-checkpointable.
```

NETGEN displays Question 5.01 only for RSX-11M/-11M-PLUS systems.

If you are in Question and Answer Mode and you have specified devices that require software DDCMP support, NETGEN displays the following statement. Question 6.00 is displayed in Component Mode.

```
; Creating build files for DCP, the DDCMP line protocol process.
;
* 06.00 Do you want DCP? [D=N] [Y/N]:
;
; DCP is the DDCMP line protocol process. It is responsible for
; providing an error-free data path over a physical device channel.
;
; If you wish to generate a new version of the DCP process, then answer
; this question YES, otherwise answer NO.
```

(continued on next page)

If you are in Question and Answer Mode and you have specified devices that require EPM, NETGEN displays the following statement. If you have specified devices that require EPM, Question 7.00 is displayed in Component Mode.

```
>; Creating build files for EPM, the Ethernet protocol manager process.
>;
>* 07.00 Do you want EPM? [D-N] [Y/N]:
>;
>; EPM is the Ethernet protocol manager process. It is responsible for
>; controlling access to the Ethernet.
>;
>; If you wish to generate a new version of the EPM process, then answer
>; this question YES, otherwise answer NO.
>;
>; <EOS> Do you want to:
>*       <RET>-Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

5.3 Define the DECnet Network Management Components

This section defines components that perform network management functions. These components include: NICE, EVR, NTD, NTDEMO, LIN, LOO, MIR, and NVP. Figure 5-3 illustrates the sequence of questions for defining the DECnet Network Management Components.

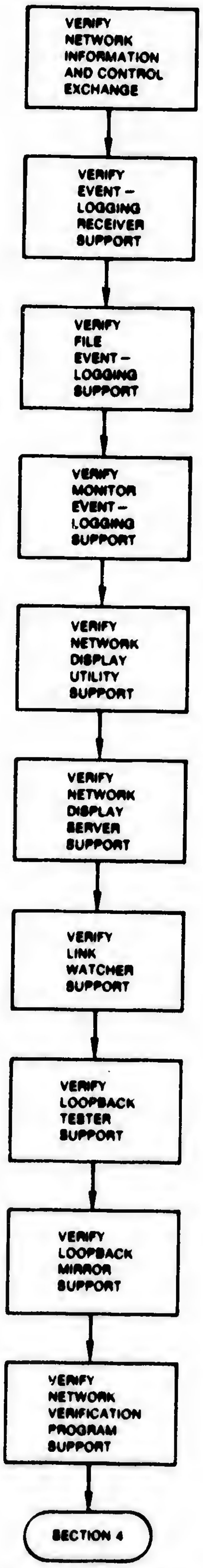
VERIFY NETWORK INFORMATION AND CONTROL EXCHANGE
VERIFY EVENT – LOGGING RECEIVER SUPPORT
VERIFY FILE EVENT – LOGGING SUPPORT
VERIFY MONITOR EVENT – LOGGING SUPPORT
VERIFY NETWORK DISPLAY UTILITY SUPPORT
VERIFY NETWORK DISPLAY SERVER SUPPORT
VERIFY LINK WATCHER SUPPORT
VERIFY LOOPBACK TESTER SUPPORT
VERIFY LOOPBACK MIRROR SUPPORT
VERIFY NETWORK VERIFICATION PROGRAM SUPPORT
SECTION 4

Figure 5-3: DEC – Section 3 – Define the DECnet Network Management Components

```
>; ====================================================================
>;  DEC Section 3 - Define the DECnet Network Management Components
>; ====================================================================
>;
>* 01.00 Do you want any of the Network Management Components? [D=N] [Y/N]:
>;
>; The DECnet Network Management Components are:
>;
>;      NICE     - The network information and control task
>;      EVR      - The network event receiver task
>;      NTD      - The node state display task
>;      NTDEMO   - The node state display server task
>;      LIN      - The link watcher task
>;      LOO      - The loop test sender task
>;      MIR      - The loop test mirror task
>;      NVP      - The network connect verification task
>;
>; If you answer YES to this question, you will be asked about each
>; component individually. In general, you should only answer YES when
>; there is a clear reason to build or rebuild one or more of these
>; components.
```

If you are in Component Mode, NETGEN displays Question 1.00. If you answer NO, you immediately jump to the end-of-section (EOS) question. If you are in Question and Answer Mode and you answered NO to Questions 9.00 and 10.00 in NET Section 1, NETGEN conditionally displays the remaining questions in Section 3.

```
* 02.00 Do you want NICE? [D=N] [Y/N]:
;
>; NICE is the network information and control server task. It allows a
>; system manager to perform network management functions from any other
>; node on the network.
>;
>; If you wish to build NICE, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add NICE later by performing a Component
>; mode generation.
;
* 03.00 Do you want EVR? [D=N] [Y/N]:
;
>; EVR is the network event receiver task. It is responsible for
>; receiving event notification messages from other nodes, and for
>; logging those messages appropriately.
;
; If you wish to build EVR, answer this question YES, otherwise answer
>; NO.
;
>; If you answer NO, you may add EVR later by performing a Component  mode
; generation.
```

Question 3.00 is always displayed for RSX-11S systems, and only for RSX-11M/11M-PLUS systems if you answered NO to Questions 9.00 and 10.00 in NET Section 1.

(continued on next page)

```
>* 03.01 Include file event logging? [D=N] [Y/N]:
>;
>; File logging allows EVR to append event data to a system wide event
>; log file. Answer this question YES if you wish to include support for
>; this option, and NO otherwise.
>;
>* 03.02 Include monitor event logging? [D=N] [Y/N]:
>;
>; Monitor logging allows EVR to hand event data to a user written task
>; for later processing. Answer this question YES if you wish to include
>; support for this option, and NO otherwise.
>;
>* 04.00 Do you want NTD? [D=N] [Y/N]:
>;
>; NTD is the node state display task. It allows the user to monitor the
>; current state of a node on a VT100 or a VT52 video terminal. It uses
>; the NTDEMO server task to obtain information about the node.
>;
>; If you wish to build NTD, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add NTD later by performing a Component mode
>; generation.
```

If you specified NTD in Question 4.00, NETGEN displays the following statement in Question and Answer Mode. If you did not specify NTD in Question 4.00, Question 5.00 is displayed in Question and Answer Mode. Question 5.00 is always displayed in Component Mode.

```
>; Creating build files for NTDEMO, the node state display server task.
>;
>* 05.00 Do you want NTDEMO? [D=N] [Y/N]:
>;
>; NTDEMO is the node state display server task. It provides information
>; to NTD, the node display task, about the node on which it resides.
>;
>; If you wish to build NTDEMO, answer this question YES, otherwise
>; answer NO.
>;
>; If you answer NO, NTDEMO may be added later by performing a Component
>; mode generation.
```

NETGEN displays the following statement for RSX-11M-PLUS systems in Question and Answer Mode. Question 6.00 is displayed in Component Mode for RSX-11M/-11M-PLUS systems. It is also displayed in Question and Answer Mode for RSX-11M systems.

(continued on next page)

```
; Creating build files for LIN, the link watcher task.
;
* 06.00 Do you want LIN? [D=N] [Y/N]:
;
; LIN is the link watcher task. It is responsible for determining what
; is to be done with an automatic service request. The following types
; of request are recognized when received from another node on the
; network.
;
; Down-line system load requests from adjacent nodes.
; Up-line system dump requests from adjacent nodes.
; Loop circuit test requests from adjacent nodes.
;
; If you wish to build LIN, answer this question YES, otherwise answer
; NO.
;
; If you answer NO, you may add LIN later by performing a Component mode
; generation (to do this, you must select DLX during this generation).
;
; Note that if you answer YES to this question, the DLX process will
; automatically be included in your target system.
```

If you are in Question and Answer Mode and you answer Question 6.00 NO, NETGEN displays the following statement.

```
; Note that to add LIN later, during a Component mode generation, the
; DLX process must be selected in this generation.
```

NETGEN displays the following statement for RSX-11M and RSX-11M-PLUS systems in Question and Answer Mode. Question 7.00 is displayed in Component Mode.

```
; Creating build files for LOO, the loop test sender task.
;
* 07.00 Do you want LOO? [D=N] [Y/N]:
;
; LOO is the loop test sender task. It is responsible for performing
; both node and circuit level loopback tests, in response to an NCP LOOP
; command.
;
; For loop node tests, LOO sends to the MIR server task. For loop
; circuit tests, LOO sends to the LIN server task.
;
; If you wish to build LOO, answer this question YES, otherwise answer
; NO.
```

LOO is never built for RSX-11S systems.

If you are in Question and Answer Mode and you answer Question 7.00 YES, NETGEN displays the following statement for RSX-11M systems. However, if you have selected other options that automatically include DLX, then the following statement is not displayed.

```
; Note that to enable LOO to perform loop circuit tests, the DLX process
; must be selected in this generation.
```

(continued on next page)

NETGEN displays the following statement in Question and Answer Mode. Question 8.00 is displayed in Component Mode.

```
; Creating build files for MIR, the loop test mirror task.
;
* 08.00 Do you want MIR? [D=N] [Y/N]:
;
; MIR is the loop test mirror task. It accepts loop node messages from
; the LOO task (or the equivalent), and reflects the messages back,
; providing a logical link loopback test.
;
; If you wish to build MIR, answer this question YES, otherwise answer
; NO.
```

If you are in Question and Answer Mode and your system is a multi-user system, the following statement is displayed. Question 9.00 is displayed in Component Mode.

```
; Creating build files for NVP, the network connect verification task.
;
* 09.00 Do you want NVP? [D=N] [Y/N]:
;
; NVP is the network connect verification task. It is responsible for
; verifying accounting data provided with a connect request against the
; system accounting file. Verification may be enabled or disabled on a
; per object basis.
;
; If you wish to build NVP, answer this question YES, otherwise answer
; NO.
;
;  EOS  Do you want to:
*         RET -Continue, S-Skip, R-Repeat section, P-Pause, E-Exit [S]:
```

5.4 Define the DECnet Satellite Support Components

This section defines the DECnet satellite support components DLL, DUM, CCR, HLD, and SLD for RSX-11S systems. Figure 5-4 illustrates the sequence of questions for defining the DECnet satellite support components.

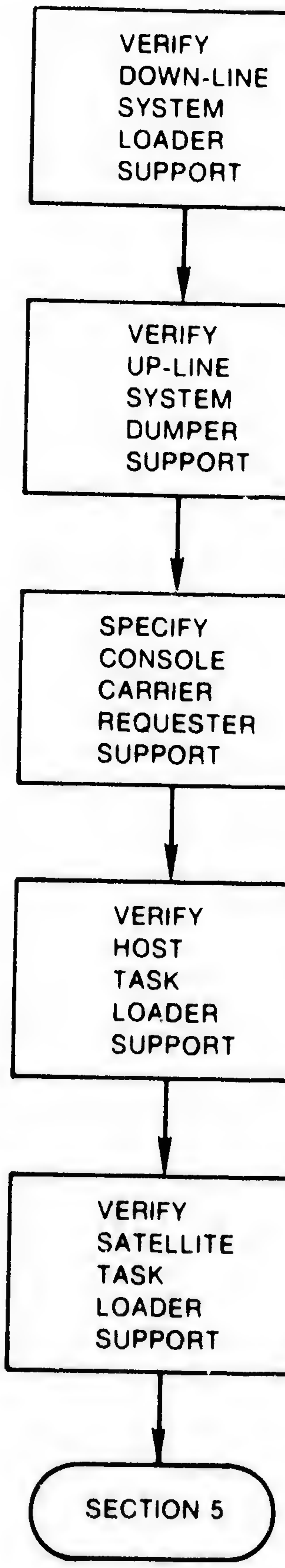
VERIFY DOWN-LINE SYSTEM LOADER SUPPORT
VERIFY UP-LINE SYSTEM DUMPER SUPPORT
SPECIFY CONSOLE CARRIER REQUESTER SUPPORT
VERIFY HOST TASK LOADER SUPPORT
VERIFY SATELLITE TASK LOADER SUPPORT
SECTION 5

Figure 5-4: DEC - Section 4 - Define the DECnet Satellite Support Components

```
>; ==================================================================
>;  DEC - Section 4 - Define the DECnet Satellite Support Components
>; ==================================================================
>;
>* 01.00 Do you want any of the Satellite Support Components? [D=N] [Y/N]:
 ;
>; The DECnet Satellite Support Components are:
>;
>;       DLL       - The down-line system loader, host component
>;       DUM       - The up-line system dumper, host component
>;       CCR       - The Console Carrier Requester, host component
>;       HLD       - The down-line task loader, host component
>;       SLD       - The down-line task loader, satellite component
>;
>; If you answer YES to this question, you will be asked about each
>; component individually. In general, you should only answer YES when
>; there is a clear reason to build or rebuild one or more of these
>; components.
```

If you are in Component Mode, NETGEN displays Question 1.00. If you answer NO to this question, you immediately jump to the end-of-section (EOS) question. The escape text will display the components your system will support. It will not display all the components listed in Question 1.00.

```
* 02.00 Do you want the Satellite Support Components? [D=N] [Y/N]:
;
; The DECnet Satellite Support Components are:
;
;       DLL       - The down-line system loader, host component
;       DUM       - The up-line system dumper, host component
;       CCR       - The console carrier requester, host component
;       HLD       - The down-line task loader, host component
;       SLD       - The down-line task loader, satellite component
;
; If you answer YES to this question, all of the Satellite Support
; Components will be generated. If you answer this question NO, you can
; add these components by doing a Component Mode Generation.
```

If you are in Question and Answer Mode, and you answered YES to Questions 9.00 or 10.00 in NET Section 1, NETGEN displays Question 2.00. The escape text will display the components your system will support. It will not display all the components listed in Question 2.00. If you are in Question and Answer Mode and you answered NO to Questions 9.00 and 10.00 in NET Section 1, NETGEN conditionally displays the remaining questions in Section 4.

(continued on next page)

```
>* 03.00 Do you want DLL? [D=N] [Y/N]:
 ;
 ; DLL is the down-line system loader task. It resides on a host system,
 ; and is responsible for loading an adjacent node with the proper
 ; operating system. The host system must be adjacent to the system to
 ; be loaded, and must be able to access the target system's image file
 ;
 ; DLL determines the proper system image file to load from information
 ; contained in the load request, from the circuit over which to load the
 ; target system, and from a data base set up by the system manager.
 ;
 ; DLL may be invoked via the NCP load command, or it may be invoked
 ; automatically by a load request which has been received over a network
 ; circuit. To be invoked automatically, the LIN task must have been
 ; generated. DLL uses the DLX interface.
 ;
 ; If you wish to build DLL, answer this question YES, otherwise answer
 ; NO.
 ;
 ; If you answer NO, you may add DLL later by performing a Component mode
 ; generation (to do this, you must select DLX during this generation).
 ;
 ; Note that if you answer YES to this question, the DLX process will
 ; automatically be included in your target system.
```

If you are in Question and Answer Mode or Component Mode and LIN was specified, NETGEN displays Question 3.00 for RSX-11M and RSX-11M-PLUS systems. This question is never displayed for RSX-11S systems.

```
* 04.00 Do you want DUM? [D=N] [Y/N]:
;
; DUM is the up-line system dumper task. It resides on a host system,
; and is responsible for dumping memory on an adjacent node to a file.
; The host system must be adjacent to the system to be dumped, and must
; be able to access the file into which the target system memory is to
; be dumped.
;
; DUM determines the proper file to dump to from information contained
; in the dump request, from the circuit over which to dump the target
; system, and from a data base set up by the system manager.
;
; DUM can only be invoked automatically by a dump request which has been
; received over a network circuit. For this reason, the LIN task must
; have been generated. To make sure an RSX-11S system may be up-line
; dumped, the user must have replaced the RSX-11S PANIC module with the
; DECnet NETPAN module when the RSX-11S system was initially SYSGEN'ed.
; DUM uses the DLX interface.
;
; If you wish to build DUM, answer this question YES, otherwise answer
; NO.
;
; If you answer NO, you may add DUM later by performing a Component mode
; generation (to do this, you must select DLX during this generation).
;
; Note that if you answer YES to this question, the DLX process will
; automatically be included in your target system.
```

(continued on next page)

If you are in Question and Answer Mode or Component Mode and LIN was specified, NETGEN displays Question 4.00 for RSX-11M and RSX-11M-PLUS systems. This question is never displayed for RSX-11S systems.

```
>* 05.00 Do you want CCR? [D=N] [Y/N]:
>;
>; CCR is the console carrier requester task. It resides on a host
>; system, and communicates with the console carrier server (CCS) which
>; resides on a remote server node. The console carrier requester in
>; conjunction with the console carrier server provide access to console
>; functions on a server system that does not have a console of its own.
>; The console carrier requester provides the user interface to the
>; console functions that will be available for the remote system.
>;
>; If you wish to build CCR, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add CCR later by performing a Component mode
>; generation (to do this, you must select DLX during this generation).
>;
>; Note that if you answer YES to this question, the DLX process will
>; automatically be included in your target system.
```

NETGEN displays Question 5.00 only if you have selected Ethernet devices.

```
>* 06.00 Do you want HLD? [D=N] [Y/N]:
>;
>; HLD is the host down-line task loader. It resides on a host system,
>; and is responsible for sending task images over a connection to be
>; loaded into the target system's memory. The host system must have
>; access to the target system's task image files.
>;
>; HLD determines the task image file to load from information contained
>; in the connect request, from the node which requested the connection,
>; and from a data base set up by the system manager. HLD may only be
>; invoked automatically by a connect request.
>;
>; To down-line load task images into an RSX-11S system, SLD must have
>; been selected for the RSX-11S system during its NETGEN.
>;
>; If you wish to build HLD, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add HLD later by performing a Component mode
>; generation.
```

If you are in Question and Answer Mode or Component Mode, NETGEN displays Question 6.00 for RSX-11M and RSX-11M-PLUS systems. This question is never asked for RSX-11S systems.

(continued on next page)

If you answered Question 6.00 YES, NETGEN displays the following statement.

```
>; To generate the HLD data base which describes the tasks to down-line
>; load, you may execute the HLDDAT.CMD command procedure at any time
>; after your network generation is complete. This command file will be
>; located as follows.
>;
>;       dduu:[x,1]HLDDAT.CMD
>;
>* 06.01 Number of incoming connections to support? [D R:1.-32. D:4.]:
>;
>; Enter the number of simultaneous incoming connections that HLD should
>; accept. This will limit the number of down-line task loads which can
>; be performed at the same time.
>;
>* 07.00 Do you want SLD? [D=N] [Y/N]:
>;
>; SLD is the satellite down-line task loader. It resides on a satellite
>; system, and is responsible for connecting to HLD on a host system and
>; for requesting the task images for it to load into memory.
>;
>; SLD determines the task to load. SLD may only be invoked automatically
>; by a run, overlay or checkpoint request.
>;
>; Note that certain SYSGEN requirements must be met before SLD can be
>; properly added to an RSX-11S system.
>;
>; If you wish to build SLD, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add SLD later by performing a Component Mode
>; generation.
```

If you are in Question and Answer Mode or Component Mode, NETGEN displays Question 7.00 for RSX-11S systems built with remote task loading support.

If your RSX-11S system was generated without remote task loading support, NETGEN displays the following statement.

```
>; SLD cannot be built for the target RSX-11S system. The target system
>; was generated without remote task loading support.
>;
>; <EOS> Do you want to:
>*       <RET>-Continue, S-Skip R-Repeat section, P-Pause, E-Exit [S]:
```

5.5 Define the DECnet File Utilities

This section defines components that perform file transfers and remote file operations. These components include: NFT, FTS, FAL and MCM. Figure 5-5 illustrates the sequence of questions for defining the DECnet File Utilities.

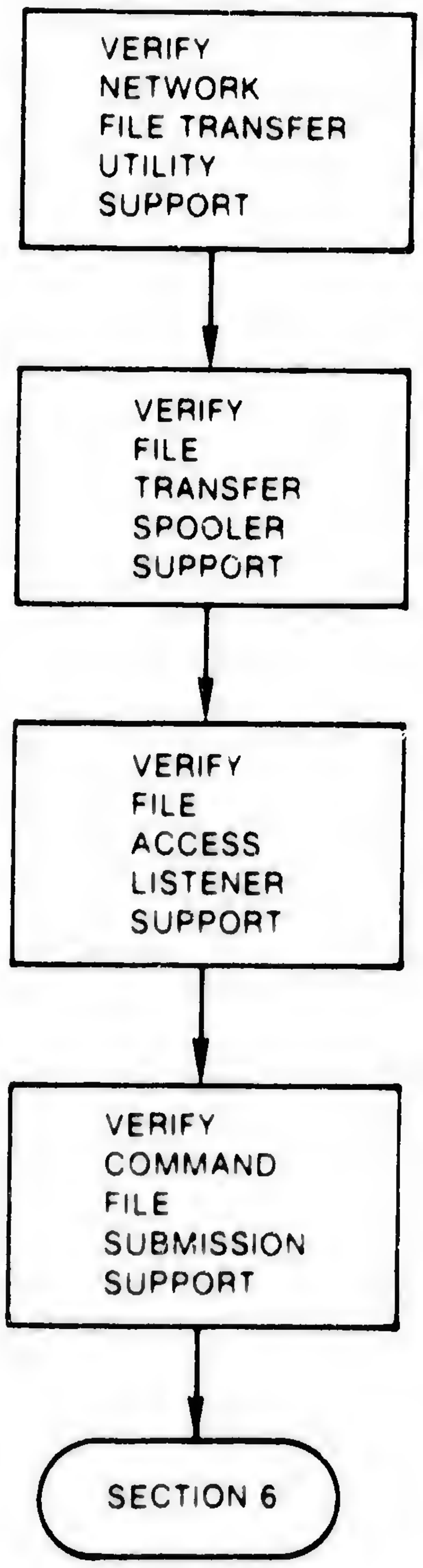
VERIFY NETWORK FILE TRANSFER UTILITY SUPPORT
VERIFY FILE TRANSFER SPOOLER SUPPORT
VERIFY FILE ACCESS LISTENER SUPPORT
VERIFY COMMAND FILE SUBMISSION SUPPORT
SECTION 6

Figure 5-5: DEC — Section 5 — Define the DECnet File Utilities

```
; ========================================================================
;  DEC - Section 5 - Define the DECnet File Utilities
; ========================================================================
;
* 01.00 Do you want any of the File Utilities? [D=N] [Y/N]:
;
; The DECnet File Utilities are:
;
;       NFT        - The network file access user task.
;       FTS        - The network file access spooler user task.
;       FAL        - The network file access server.
;       MCM        - The network command file submission server.
;
; If you answer YES to this question, you will be asked about each
; component individually. In general, you should only answer YES when
; there is a clear reason to build or rebuild one or more of these
; components.
```

NETGEN displays Question 1.00 in Component Mode. If you answer NO, you immediately jump to the end-of-section (EOS) question.

```
* 02.00 Do you want NFT? [D=N] [Y/N]:
;
; NFT is the network file access user task. It allows users to access
; files on other nodes in the network. The types of file operations
; allowed include file transfer, file deletion, directory listing, and
; command/batch file execution.
;
; If you wish to build NFT, answer this question YES, otherwise answer
; NO.
;
; If you answer NO, you may add NFT later by performing a Component Mode
; generation.
```

If you are in Question and Answer Mode or Component Mode, NETGEN displays Question 2.00 for RSX-11M and RSX-11M PLUS systems. Question 2.00 is never displayed for RSX-11S systems.

```
* 03.00 Do you want FTS? [D=N] [Y/N]:
;
; FTS is the network file access spooler user task. It allows users
; to access files on other nodes in the network in a spooled fashion.
; That is, file access operations may execute immediately, may wait for
; a specific time, or may wait for the source or target node to become
; available on the network. The types of file operation allowed include
; file transfer, file deletion, and command/batch file execution.
;
; When FTS is selected, the queue management tasks, FTQ and FTSDEQ, are
; automatically included.
;
; If you wish to build FTS, answer this question YES, otherwise answer
; NO.
;
; If you answer NO, you may add FTS later by performing a Component mode
; generation.
;
* 04.00 Do you want FAL? [D=N] [Y/N]:
;
; FAL is the network file access server. It is responsible for
; performing all of the file operations requested by users residing on
; other nodes.
;
; If you wish to build FAL, answer this question YES, otherwise answer
; NO.
```

(continued on next page)

```
>; If you answer NO, you may add FAL later by performing a Component mode
>; generation.
>;
>* 04.01 Should FAL support RMS file access? [D=Y] [Y/N]:
>;
>; Answer this question YES if you wish to allow network access to RMS
>; file services on your node. Answer this question NO if you wish to
>; allow only FCS file access.
>;
>; In order to include RMS support, you must have previously placed the
>; proper RMS files on your LB: device under the proper UIC's. If you
>; wish to use the RMS routines (not memory resident RMS library), these
>; files and UIC's are:
>;
>;      LB:[1,1]RMSLIB.OLB
>;      LB:[1,1]RMS11X.ODL
>;      LB:[1,1]RMS12X.ODL
>;      LB:[1,1]VMLIB.OLB
>;
>; If you wish to use the memory resident RMS library, these files and
>; UIC's are:
>;
>;      LB:[1,1]RMSRLX.ODL
>;      LB:[1,1]RMSRES.TSK
>;      LB:[1,1]RMSRES.STB
>;      LB:[1,1]VMLIB.OLB
>;
>; If the proper files are not present on LB: under the proper UIC, you
>; may pause and move them now.
```

NETGEN displays Question 4.01 for RSX-11M systems only. For RSX-11M-PLUS systems, a multicopy version of RMS FAL will be generated. For RSX-11S systems, the 11S version of FCS FAL is used.

```
>* 04.02 Should FAL be overlaid? [D=N] [Y/N]:
>;
>; Answer this question YES if FAL should be overlaid. This will reduce
>; the size of FAL by approximately 4000 words but will also reduce the
>; performance.
>;
>; Note that if FAL is going to support RMS file access, and if the RMS
>; routines are to be included directly in the FAL task image (i.e. a
>; memory resident RMS library is not supported), then the RMS routines
>; will always be overlaid. This question only controls the overlaying
>; of the FAL mainline code.
```

NETGEN displays Question 4.02 only for RSX-11M systems (for FCS and RMS versions of FAL). RSX-11M-PLUS and RSX-11S will not be overlaid.

```
>* 04.03 Do you want to use supervisor mode RMSRES? [D=N] [Y/N]:
>;
>; The supervisor mode resident RMS library has been found on LB:[3,54].
>; Answer this question YES if you wish FAL to link to this library. If
>; you choose not to use the supervisor mode resident RMS library, FAL
>; will link to the non-supervisor mode resident RMS library.
>;
>; Using a memory resident RMS library will result in better performance
>; and will reduce task memory requirements. Using this option will,
>; however, require that the RMSRES library be permanently installed and
>; loaded on your system (this library is shareable between all tasks
>; which use RMS, so the extra memory required by the library matters
>; only if there is only one RMS task). The two resident libraries are
>; the same size.
```

NETGEN displays Question 4.03 only for RSX-11M-PLUS systems if the library is found. Either supervisor mode RMSRES is used or nonsupervisor mode RMSRES is used.

(continued on next page)

```
>* 4.04 Do you want to use the memory resident RMS library? [D=N] [Y/N]:
>;
>; A memory resident RMS library has been found on LB:[1,1]. Answer this
>; question YES if you wish FAL to link to this library.
>;
>; Using a memory resident RMS library will result in better performance
>; and will reduce task memory requirements. Using this option will,
>; however, require that the RMSRES library be permanently installed and
>; loaded on your system (this library is shareable between all tasks
>; which use RMS, so the extra memory required by the library matters
>; only if there is only one RMS task).
```

NETGEN displays Question 4.04 only for RSX-11M systems if the library is found.

After you do a Component Mode generation, you may need to update the NETINS.CMD file. For example, if you specified resident RMS in a previous generation, NETINS.CMD will automatically check to see if resident RMS was installed. If you are generating a version of FAL that does not require resident RMS, you should remove this check by editing the NETINS.CMD file.

```
>* 04.05 Do you want the minimum size RMS? [D=N] [Y/N]:
>;
>; Answer this question YES if you wish the RMS portion FAL to be as
>; small as possible, and NO otherwise.
>;
>; Requesting the minimum size RMS will reduce FAL's memory requirements,
>; but will also result in reduced performance. Use of the minimum size
>; RMS will save 3K bytes of FAL task space.
>;
>; If you answer this question YES, the RMS portion of FAL will be built
>; using the RMS11X.ODL overlay description file. If you answer this
>; question NO, the RMS portion of FAL will be built using the RMS12X.ODL
>; overlay description file. These files are distributed with your RSX
>; kit.
```

NETGEN displays Question 4.05 for RMS FAL on RSX-11M systems only if you answered NO to Question 4.04.

```
>* 04.06 Number of incoming connections to support? [D R: 1.-10. D:4.]:
>;
>; Enter the number of simultaneous incoming connections that FAL should
>; accept. This will limit the number of network file access requests
>; which can be serviced at the same time.
```

NETGEN displays Question 4.06 for RSX-11M and RSX-11S systems.

(continued on next page)

```
>* 04.07 User data buffer size? [D 260.:1024. D:512.]:
>;
>; Specify the size of the buffer to be used for user data transfers.
>; The buffer must be large enough to hold the largest record that FAL
>; will ever have to transfer. For task image files, a buffer of 512
>; bytes is sufficient.
>;
>; Note that the data buffer size effects the efficiency of the data
>; transfers and the size of FAL's dynamic memory pool.
```

NETGEN displays Question 4.07 for RSX-11M/-11M-PLUS/-11S systems.

If your system does not have multi-user protection, NETGEN displays Questions 4.08 through 4.10 for RSX-11M and RSX-11M-PLUS systems. For RSX-11S systems, only Question 4.08 is displayed, and only the first line of the explanatory text is displayed.

```
>* 04.08 What is the privileged password? [D=PRIV] [S R:0.-8.]:
>;
>; Enter the password to use to check for privileged access to files.
>;
>; This password is required since the target system does not have
>; multi-user protection but DECnet must provide access protection.
>;
>; Use of this password with any UIC will allow network file access to
>; any files which could be accessed by a local user logged onto that
>; UIC.
>;
>* 04.09 What is the non-privileged password? [D=GUEST] [S R:0.-8.]:
>;
>; Enter the password to use to check for non-privileged access to files.
>; The UIC associated with this password is defined in the next question.
>;
>; This password is required since the target system does not have
>; multi-user protection but DECnet must provide access protection.
>;
>; Use of this UIC and password will allow network file access to any
>; files which could be accessed by a local user logged onto the UIC.
>;
>* 04.10 What is the guest UIC? [D=200,200] [S R:0.-9.]:
>;
>; Enter the guest UIC for network file access. The format for entering
>; a UIC is either "[grp,mem]" or "grp,mem".
>;
>; This UIC is associated with the password defined in the previous
>; question.
>;
>; Use of this UIC and password will allow network file access to any
>; files which could be accessed by a local user logged onto the UIC.
>;
```

```
>* 05.00 Do you want MCM? [D=N] [Y/N]:
>;
>; MCM is the network command or batch file submission server. It
>; receives file submission requests from NFT or FAL, and submits the
>; indicated command or batch files for execution on the system on which
>; it resides.
>;
>; Note that MCM uses the RSX-11 send data mechanism, rather than DECnet
>; connections, to receive requests. For this reason, either NFT or FAL
>; or both must have been selected for the target system.
>;
>; If you wish to build MCM, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add MCM later by performing a Component Mode
>; generation.
```

If you are in Question and Answer Mode or Component Mode and you have specified NFT or FAL, NETGEN displays Question 5.00 for RSX-11M and RSX-11M-PLUS systems. Question 5.00 is always asked in Component Mode and is never asked for RSX-11S systems.

```
>* 05.01 Should requests be queued to Batch? [D=N] [Y/N]:
>;
>; If you answer this question YES, NFT Submit (/SB) and Execute (/EX)
>; requests will be entered into the Batch queue for execution.
>;
>; If you answer NO, the requests will be sent to the Indirect Command
>; File processor (AT.).
```

Question 5.01 is displayed for RSX-11M-PLUS systems only.

```
>;
>; <EOS> Do you want to:
>*        <RET>-Continue, S-Skip R-Repeat section, P-Pause, E-Exit [S]:
```

(continued on next page)

5.6 Define the DECnet Terminal and Control Utilities

This section defines the DECnet terminal and control utilities: RMT (with RMTACP), HT: (with RMHACP), NCT, RTH, TLK, LSN, and TCL. These tasks allow you to establish a remote terminal, establish a network command terminal, carry on a dialog between nodes, and control a task on a remote node. Figure 5-6 illustrates the sequence of questions for defining the DECnet terminal and control utilities.

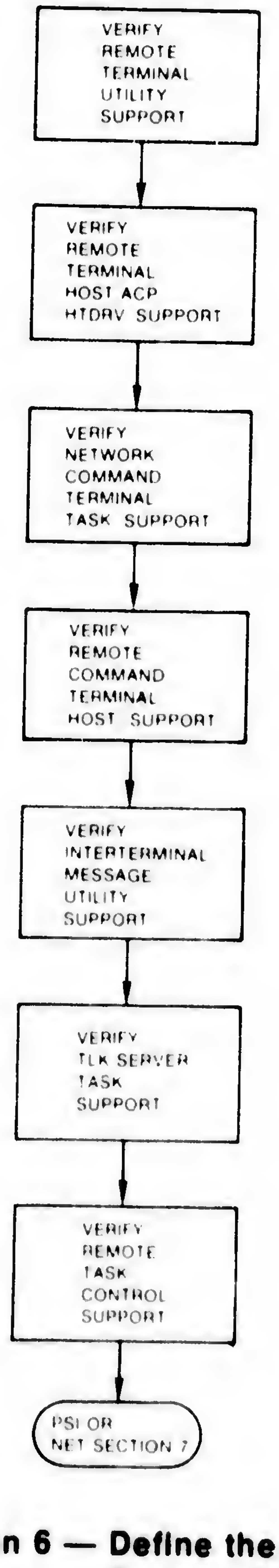
VERIFY REMOTE TERMINAL UTILITY SUPPORT
VERIFY REMOTE TERMINAL HOST ACP HTDRV SUPPORT
VERIFY NETWORK COMMAND TERMINAL TASK SUPPORT
VERIFY REMOTE COMMAND TERMINAL HOST SUPPORT
VERIFY INTERTERMINAL MESSAGE UTILITY SUPPORT
VERIFY TLK SERVER TASK SUPPORT
VERIFY REMOTE TASK CONTROL SUPPORT
PSI OR NET SECTION 7

Figure 5-6: DEC — Section 6 — Define the DECnet Terminal and Control Utilities

```
>; ==============================================================
>;  DEC - Section 6 - Define the DECnet Terminal and Control Utilities
>; ==============================================================
>;
>* 01.00 Do you want any of the Terminal and Control Utilities? [D=N] [Y/N]:
>;
>; The DECnet Terminal and Control Utilities are:
>;
>;       RMT/RMTACP  - The remote network terminal task and ACP.
>;       HT:/RMHACP  - The remote network terminal driver and ACP.
>;       NCT         - The network command terminal server.
>;       RTH         - The remote command terminal host support.
>;       TLK         - The remote talk user task.
>;       LSN         - The remote talk server task.
>;       TCL         - The remote task control server task.
>;
>; If you answer YES to this question, you will be asked about each
>; component individually. In general, you should only answer YES when
>; there is a clear reason to build or rebuild one or more of these
>; components.
```

NETGEN displays Question 1.00 in Component Mode. If you answer NO, you immediately jump to the end-of-section (EOS) question.

```
>* 02.00 Do you want RMT/RMTACP? [D=N] [Y/N]:
>;
>; RMT and RMTACP are the remote network terminal task and ACP. They
>; reside on the user's local system, and allow the user's terminal to be
>; logically connected to any other RSX node in the network which
>; supports the HT: device and its ACP, RMHACP.
>;
>; If you wish to build RMT and RMTACP, answer this question YES,
>; otherwise answer NO.
>;
>; If you answer NO, you may add RMT and RMTACP later by performing a
>; Component Mode generation.
>;
>* 02.01 Maximum number of simultaneous RMT users? [D R:1.-16. D:4.]:
>;
>; Enter the maximum number of simultaneous RMT users that you wish your
>; system to support.
>;
>* 03.00 Do you want HT:/RMHALP? [D=N] [Y/N]:
>;
>; HT: and RMHACP are the remote network terminal driver and ACP. They
>; reside on a host system, and allow users on other nodes in the network
>; to logically connect their terminals to the host system, through the
>; host's HT: terminal devices.
>;
>; If you wish to build HT: and RMHACP, answer this question YES,
>; otherwise answer NO.
>;
>; If you answer NO, you may add HT: and RMHACP later by performing a
>; Component Mode generation.
>;
>* 03.01 Number of incoming connections to support? [D R:1.-16. D:4.]:
>;
>; Enter the number of simultaneous incoming connections that RMHACP
>; should accept. This will limit the number of network terminal users
>; that can log onto your system at the same time.
>;
```

(continued on next page)

```
* 03.02 Number of HT: units to generate? [D R:n.-64. D:n.]:
;
; Enter the number of HT: device units to generate. Each incoming
; RMHACP connection requires one HT: unit.
;
; Note that if you plan to include the X29ACP remote terminal PSI
; component, you must specify enough HT: units for both RMHACP and
; X29ACP. These units will be dynamically allocated on an as-needed
; basis by these two components, so you need only allocate enough HT:
; units to satisfy their concurrent requirements.
```

The variable, *n*, is the value you specified in Question 3.01. NETGEN displays Question 3.02 for DECnet systems with PSI.

```
* 04.00 Do you want NCT? [D=N] [Y/N]:
;
; NCT is the network command terminal server. It resides on the user's
; local node, and allows the user's terminal to be logically connected to
; any other node in the network with the network command terminal facility.
;
; If you wish to build NCT answer this question YES, otherwise answer NO.
;
; If you answer NO, you may add NCT later by performing a Component
; Mode generation.
```

NETGEN displays Questions 4.00 and 5.00 if you selected extended network support by answering YES to Question 6.00 in DEC Section 1.

```
* 05.00 Do you want RTH? [D=N] [Y/N]:
;
; RTH is the remote command terminal host support process. It resides on
; the user's local node and allows users on other nodes to logically
; connect their terminals to the local system through the network
; command terminal facility.
;
; If you wish to build RTH answer this question YES, otherwise answer it
; NO.
;
; If you answer NO, you may add RTH later by performing a Component Mode
; generation.
;
* 06.00 Do you want TLK? [D=N] [Y/N]:
;
; TLK is the remote talk user task. It resides on the user's local
; system, and allows a user to hold a "conversation" with a user on an
; RSX node which supports the LSN task.
;
; If you wish to build TLK, answer this question YES, otherwise answer
; NO.
;
; If you answer NO, you may add TLK later by performing a Component Mode
; generation.
```

(continued on next page)

If you are in Question and Answer Mode and you specified TLK, NETGEN displays the following statement. If you did not specify TLK, NETGEN displays Question 7.00. Question 7.00 is always displayed in Component Mode.

```
>; Creating build files for LSN, the remote talk server task.
>;
>* 07.00 Do you want LSN? [D=N] [Y/N]:
>;
>; LSN is the remote talk server task. It resides on a target system,
>; and allows a user on an RSX node which supports the TLK task to hold a
>; "conversation" with a user on the system which supports the LSN task.
>;
>; If you wish to build LSN, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add LSN later by performing a Component Mode
>; generation.
>;
>* 07.01 Number of incoming connections to support? [D R:1.-20. D:4.]:
>;
>; Enter the number of simultaneous incoming connections that LSN should
>; accept.
>;
>* 08.00 Do you want TCL? [D=N] [Y/N]:
>;
>; TCL is the remote task control server task. It allows users on other
>; nodes to control task execution on the node on which TCL is installed.
>; TCL will accept requests over DECnet connections to run, abort and
>; cancel tasks on its local node. Routines to connect to TCL and issue
>; these requests are contained in the DECnet FORTRAN/COBOL/BASIC+2 object
>; library.
>;
>; If you wish to build TCL, answer this question YES, otherwise answer
>; NO.
>;
>; If you answer NO, you may add TCL later by performing a Component Mode
>; generation.
```

If your system does not have multi-user protection, NETGEN displays Questions 8.01, 8.02, and 8.03.

```
>* 08.01 What is the privileged password? [<RET>=None] [S R:0.-8.]:
>;
>; Enter the password to use to check for privileged access. Privileged
>; access provides the ability to run tasks under any UIC, and to cancel
>; or abort any task.
>;
>; This password is required since the target system does not have
>; multi-user protection but DECnet must provide access protection.
>;
>* 08.02 What is the non-privileged password? [<RET>=None] [S R:0.-8.]:
>;
>; Enter the password to use to check for non-privileged access.
>; Non-privileged access provides the ability to run tasks under
>; the non-privileged UIC.
>;
```

(continued on next page)

```
>* 08.03 What is the non-privileged UIC? [<RET>=None] [S R:0.-9.]:
>;
>; Enter the UIC under which non-privileged users may run tasks. If no
>; UIC is specified, then nonprivileged users can run tasks under
>; any UIC. Non-privileged can abort or cancel only those tasks which
>; they have initiated.
>;
 ; The format for entering a UIC is either "[grp,mem]" or "grp,mem".
>;
>; <EOS> Do you want to:
>*       <RET>-Continue, S-Skip R-Repeat section, P-Pause, E-Exit [S]:
>;
>; =============================================================
>;  DEC - DECnet CEX Product Generation Procedure
>;        DECnet question/answer section completed at time on date
>; =============================================================
```

If you are doing a Component Mode generation and you are adding extended network support, NCT, or RTH, NETGEN displays the following statement. This statement may vary based on what you added.

```
>; CETAB.MAC is being rebuilt to reflect the following new options:
 ;      - the addition of the extended network support for terminals and
 ;        layered products.
>;      - the addition of NCT (Network Command Terminal server)
>;      - the addition of RTH (Remote Command Terminal host support)
 ;
 ; Adding NCT or RTH will change the data structure used by your network. If
>; you are currently running the network you are modifying, it is recommended
 ; that you reload the network as soon as this generation is done.
```

NOTE

If you are generating the PSI product, NETGEN proceeds with the PSI generation (Chapter 6). If you are not generating the PSI product, NETGEN proceeds with the remainder of the NET generation procedure, NET Section 8 — Complete the CEX System (Section 4.9).

Chapter 6
NETGEN Dialog: PSI

Chapter 6 presents the third part of the NETGEN dialog: PSI (the Packetnet System Interface). NETGEN displays a series of questions relating to PSI components if you have purchased a license for the RSX-11 PSI product. These questions immediately follow DEC Section 6.

If you are not familiar with the Packet Switching Network (PSN) terminology, you can refer to: the *Introduction to RSX-11 PSI* Manual, the *RSX-11 PSI User's Guide*, and the *RSX-11 PSI Network-Specific Information Manual*.

In PSN terminology, data terminal equipment (DTE) refers to your computer equipment that connects to the PSN, while data communications equipment (DCE) is the PSN's equipment. Your DTE (computer or X.29 terminal) connects to a DCE on the PSN.

6.1 Specify Target Network Characteristics

This section defines the characteristics for the Packet Switching Network (PSN) you will be connecting to. Figure 6-1 illustrates the sequence of questions for specifying the target network characteristics.

NOTE

A Packet Switching Network (PSN) and a Public Packet Switching Network (PPSN) are synonymous.

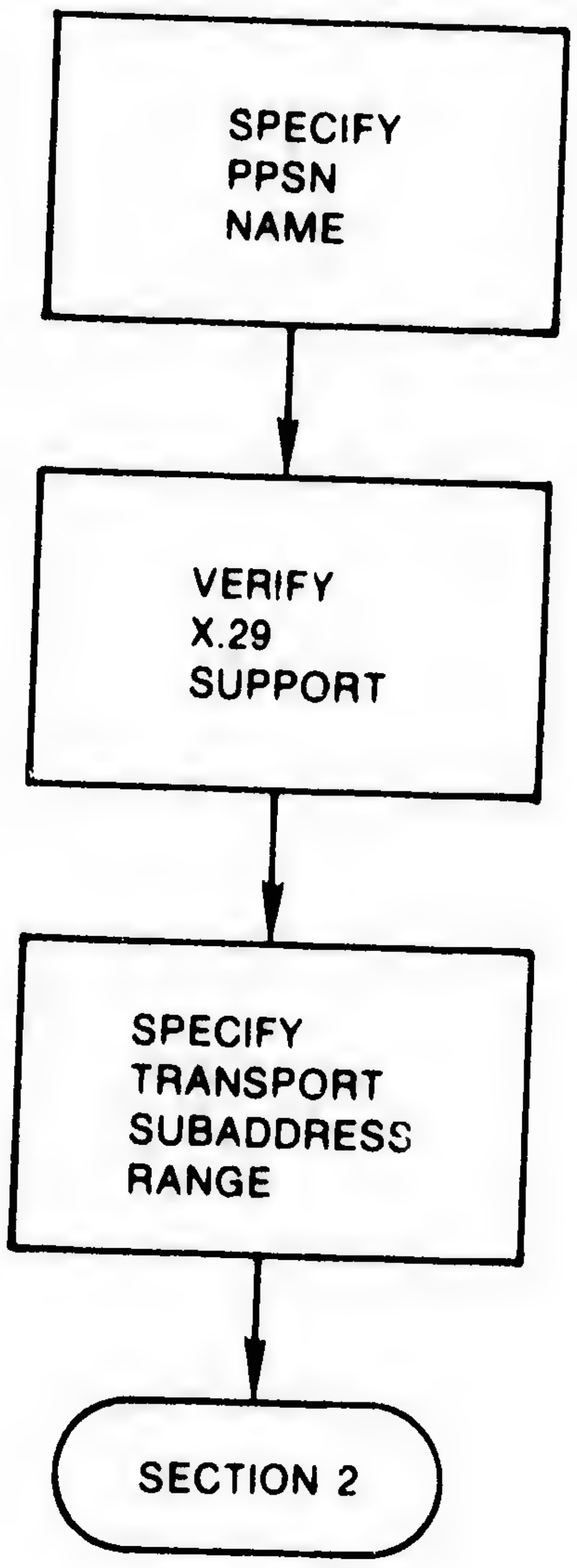

Figure 6–1: PSI - Section 1 - Specify Target Network Characteristics

```
>; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
>; PSI - PSI CEX Product Generation Procedure
>;       Starting questions at time on date
>; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
>;
>;
 ; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
 ; PSI - Section 1 - Specify Target Network Characteristics
 ; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
 ;
 * 01.00 Public Packet Switching Network name? [S R:1. -8.]:
 ;
 ; Enter the name of the Public Packet Switching Network (PSN) to
 ; which you want to connect your DTEs. Refer to the RSX-11 PSI
 ; Network-Specific Information manual for details of currently supported
 ; network names. Only specify alphanumeric characters in the network
 ; name, ignoring any other characters such as hyphens. The network name
 ; will be truncated to the first six characters.
```

If your PSN *netnam* is not yet supported by RSX-11 PSI, NETGEN displays the following statement.

```
; RSX-11 PSI does not yet support the network netnam. NETGEN will
; configure RSX-11 PSI for the default network. When NETGEN is complete,
; please contact your Software Specialist who will reconfigure RSX-11
; PSI for netnam. This will not require another NETGEN.
;
* 02.00 Do you want X.29 support? [D=N] [Y/N]:
;
; If you need support for remote X.29 terminals, answer Y to this
; question.
;
* 03.00 What is the transport subaddress range? [S R:0 -9.]:
;
; The transport subaddress range is used to identify which calls are
; directed to DECnet and which calls are directed to PSI. Any calls
; within the range you specify will be passed to DECnet via DLM.
;
; Specify the subaddress range using one of the following
; formats:
;
;          LLLL - HHHH where LLLL is the low end of the range and HHHH, the
;                      high end. LLLL and HHHH are in the range 0 - 9999.
;
;          LLLL        where HHHH defaults to LLLL.
;
;           RET        indicates there is no subaddress range.
```

Your response to Question 3.00 determines which incoming calls are routed to DLM. If you specify 0 in this range, incoming calls are sent to DLM.

However, X.29 uses subaddress 0. If you have X.29 support make sure you do not specify 0, because specifying 0 will cause incoming X.29 calls to go to DLM.

```
;  EOS> Do you want to:
*       <RET> - Continue, R - Repeat section, P - Pause, E - Exit.
```

6.2 Specify Local DTEs

This section defines the characteristics of your local DTEs. Figure 6-2 illustrates the sequence of questions for specifying local DTEs.

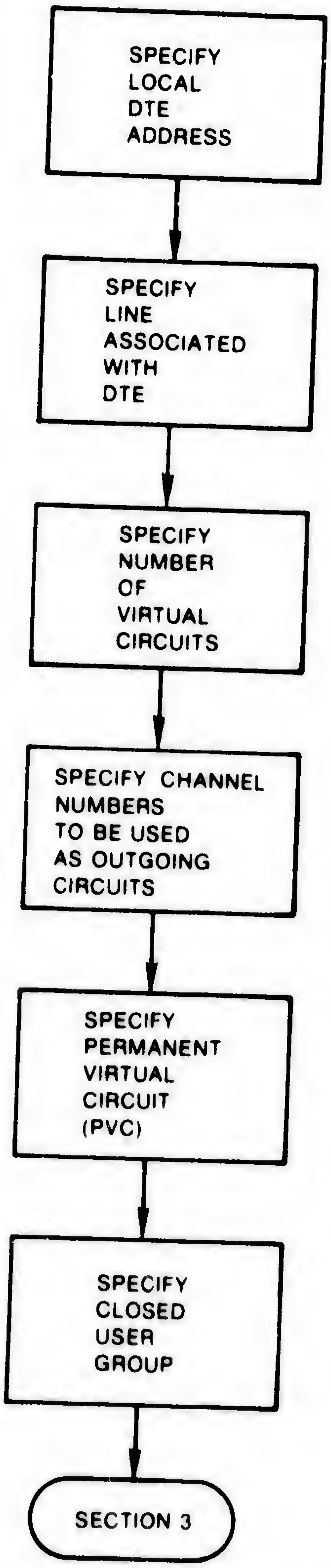
SPECIFY LOCAL DTE ADDRESS
SPECIFY LINE ASSOCIATED WITH DTE
SPECIFY NUMBER OF VIRTUAL CIRCUITS
SPECIFY CHANNEL NUMBERS TO BE USED AS OUTGOING CIRCUITS
SPECIFY PERMANENT VIRTUAL CIRCUIT (PVC)
SPECIFY CLOSED USER GROUP
SECTION 3

Figure 6-2: PSI - Section 2 - Specify Local DTEs

```
; ==================================================================
; PSI - Section 2 - Specify Local DTEs
; ==================================================================
;
• 01.00 What is the local DTE address? [S R:0.-15.]:
;
; The local DTE is connected to the PSN, and gives you access to the
; network. The DTE address is the number assigned to the local DTE by
; the network vendor. See the Network-Specific Information Manual for
; the format of the DTE address for this network.
;
; Enter the address of the local DTE in the required format, (up to 15
; digits). If you have already specified all DTEs, answer RET .
;
• 02.00 Which line is associated with this DTE? [S R:1.-9.]:
;
; Identify the line associated with this DTE. Use a line id in the form
; ddd cc[ uu], where:
;
;
;       ddd identifies the device.
;
;       cc  identifies the controller.
;
;       uu  optionally identifies the unit.
;
; of this line.
;
; The following lines have been generated:
;
; (list of PSI lines)
```

When NETGEN displays the list of PSI lines, specify one of these lines. This list was created as a result of the devices you specified in NET Section 3 Question 1.

```
• 03.00 How many virtual circuits can be active at once? [D R:1.-255.]:
;
; Specify the maximum number of virtual circuits that can be active
; simultaneously on this DTE. The number you specify is equivalent to
; the total number of calls, (incoming and outgoing), plus the
; permanent virtual circuits (PVCs), that can be handled at any one time.
; Thus the number you specify should include X.29 circuits.
;
; If you are defining more than one DTE, then the total number of active
; circuits in the system must not exceed 255.
;
• 04.00 What channels can be used for outgoing calls? [S]:
;
; The logical channel numbers you specify here will be used for outgoing
; and may be incoming calls for this DTE. Specify a list of channel
; numbers, separating the numbers by hyphens to indicate ranges, and
; commas to indicate individual numbers. For example:
;
;         20-10,8,3
;
; defines channel numbers 20 through 10, 8 and 3. Channel numbers are
; in the range 1 to 4095, and are assigned by the network vendor.
;
; Note that channels will be used in the same order as they are
; specified. You must specify the high end of a channel range first,
; followed by the low end, otherwise the PSI software will not operate
; correctly.
;
; If there are no channel numbers to be specified, answer with RET .
```

(continued on next page)

NETGEN displays the following statement before Question 5.00.

```
>; Specify permanent virtual circuits (PVCs) for this DTE.
>;
>; Note that any DLM PVCs must also be included.
>;
>; The following DLM circuits have been generated:
>;
>; DLM-x.y S
>; DLM-x.y P
```

In the above list of DLM circuits, the circuit ID will be followed by an S or a P. An S refers to switched virtual circuits (SVCs) and a P refers to permanent virtual circuits (PVCs).

```
>* 05.00 Enter a PVC used by this DTE. [S R:0 -14.]:
>;
>; Each PVC that you have been allocated by the network vendor is
>; identified by a logical channel number in the range 1 to 4095. You
>; can give each PVC a name, when you associate the PVC with your local
>; DTE.
>;
>; Enter a PVC used by this DTE in the following format:
>;
>;          name,channel
>;
>; where
>;
>;          name        is the name you have chosen for the PVC, (up to 6
>;                      characters long).
>;
>;          channel     is the logical channel number supplied by the
>;                      network vendor.
>;
>;
>; Answer with <RET> if you have specified all PVCs.
>;
>; For DLM PVC names, enter the DLM circuit names.
>;
>; The following DLM circuits have been generated:
>;
>; (list of DLM circuits)
```

The same PVC name should not be used to identify more than one PVC.

(continued on next page)

```
>* 06.00 Enter a closed user group for this DTE. [S R:0 -21.]:
>;
>; A closed user group is an optional facility which allows a DTE
>; belonging to the group to communicate with other members of the same
>; group, but not with any other DTEs. A bilateral closed user group is
>; a special case of this, where the group consists of only two DTEs.
>;
>; A DTE may belong to one or more closed user groups. Each closed user
>; group is identified by a name given it by the members of the group,
>; and a group number given it by the network vendor.
>;
>; Specify a closed user group for this DTE in the following format:
>;
>;      name,number[,BILATERAL]
>;
>; where
>;
>;      name       is the name of this group (up to 6 characters).
>;
>;      number     is the number allocated to this group by the network
>;                 vendor.
>;
>;      BILATERAL means that the group is bilateral.
>;
>; If you have specified all closed user groups for this DTE, answer with
>; <RET>.
>;
>; <EOS> Do you want to:
>*       <RET> - Continue, R - Repeat section, P - Pause, E - Exit.
```

6.3 Specify Incoming Call Destinations

This section defines incoming call destinations. A destination contains a set of parameter values describing the calls the destination can accept. Each destination is associated with a task you have written to process a particular type of call.

When an incoming call arrives, the information it carries is compared with the parameter values for each destination. The call is processed by the task associated with the destination whose values match those of the call. If more than one destination can accept the call, it goes to the destination with the highest priority.

Figure 6–3 illustrates the sequence of questions for specifying incoming call destinations.

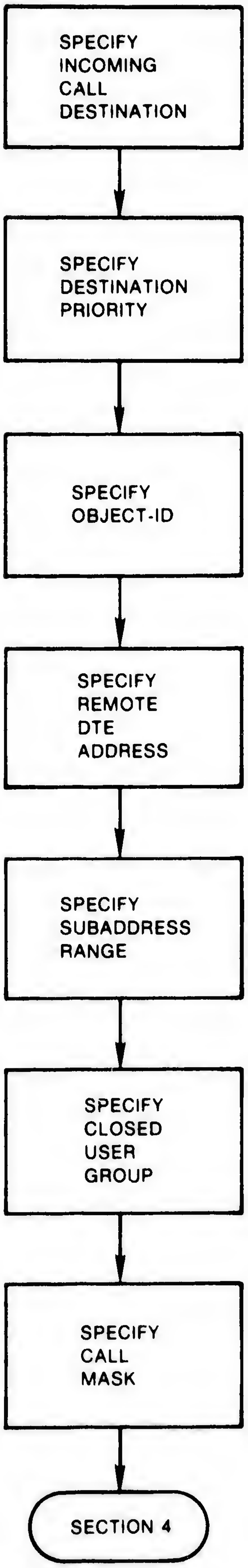
SPECIFY INCOMING CALL DESTINATION
SPECIFY DESTINATION PRIORITY
SPECIFY OBJECT-ID
SPECIFY REMOTE DTE ADDRESS
SPECIFY SUBADDRESS RANGE
SPECIFY CLOSED USER GROUP
SPECIFY CALL MASK
SECTION 4

Figure 6–3: PSI – Section 3 – Specify Incoming Call Destinations

```
>; ==========================================================
>; PSI - Section 3 - Specify Incoming Call Destinations
>; ==========================================================
>;
>; Specify the X.25 destinations
```

NETGEN displays Questions 1.00 through 7.00 for each X.25 destination you want to specify. To indicate you are done, press (RET). NETGEN then repeats the same questions for you to specify X.29 destinations instead of X.25.

```
>* 01.00 Identify an incoming call destination. [S R:0 -6.]:
>;
>; Each incoming call destination is identified by a destination name.
>; You specify the parameters in the destination and these are used to
>; decide if the incoming call will be accepted by the destination. One
>; of the parameters in the destination also names the task that the call
>; will be passed to, for processing.
>;
>; You can specify a destination name up to 6 characters long.
>;
>; If you have specified all destinations, answer with <RET .
```

If you specified X.29 support, NETGEN automatically defines a destination so X.29 calls use MCR as the Command Language Interpreter. You do not need to specify such a destination for Question 1.00.

```
>* 02.00 What is the priority? [D R:0 -255. D:0]:
>;
>; All destinations are placed on the destination list in order of
>; priority. When an incoming call arrives, the destination list is
>; searched for a suitable destination. The call is sent to the first
>; (i.e. highest priority) destination that can accept it. You can
>; specify a priority in the range 0 to 255, where 0 is the lowest
>; priority.
>;
>* 03.00 What is the object-id? [S R:1. -6.]:
>;
>; The object-id identifies the task which will process the calls
>; accepted by this destination. You can specify a task name, (up to 6
>; characters), or, if the object is a multicopy task, you must specify
>; the object's number, (in the range 1 to 255).
>;
>; A multicopy task can process as many calls at one time as there are
>; copies of the task. If you are specifying a multicopy task here, you
>; must select multicopy task support when you build the X25ACP
>; component.
```

To indicate a multicopy task, you must specify an object number instead of an object name in Question 3.00.

(continued on next page)

NETGEN displays Question 3.01 if you specified a multicopy task in Question 3.00.

```
* 03.01 What is the task name for this object? [S]:
;
; Specify the name of the multicopy task for this object. The name must
; be in the form:
;
;           AAA$$$
;
; where
;
;           AAA denotes one to three alphanumeric characters.
;
* 04.00 What is the remote DTE address? [S R:0 -15.]:
;
; If you specify a remote DTE address, only incoming calls from the
; specified remote DTE will be accepted by this destination.
;
; Specify the address assigned to the remote DTE in the format required
; for this network, (see the Network-Specific Information Manual). Up
; to 15 digits are allowed. An asterisk in any position will match any
; digit in the corresponding position in the incoming call remote DTE
; address.
;
; If the destination will accept calls from any remote DTE, answer with
;  RET .
;
* 05.00 What is the subaddress range? [S R:0 -9.]:
;
; If you specify a subaddress range, only incoming calls whose
; subaddresses are within the specified range will be accepted by this
; destination.
;
; Specify the subaddress range using one of the following formats:
;
;      LLLL - HHHH where LLLL is the low end of the range and HHHH, the
;                  high end. LLLL and HHHH are in the range 0 to 9999.
;
;      LLLL        where HHHH defaults to LLLL.
;
;       RET        where there is no subaddress range and thus the
;                  destination accepts calls with any subaddress.
;
* 06.00 What is the closed user group name? [S R:0 -6.]:
;
; Specify the name of the closed user group whose calls will be accepted
; by this destination. If the destination will accept calls from any
; user group, answer with  RET .
;
```

(continued on next page)

```
* 07.00 What is the call mask? [S R:1.-32.]:
;
; If you specify a call mask for this destination, the user data value
; in the incoming call is subjected to a logical-and operation. The
; value resulting from this masking operation is compared with the
; destination's call value. An incoming call will only be accepted by
; the destination if its masked call value is equal to the call value of
; the destination.
;
; If the destination's call mask is longer than the user data in the
; incoming call, the call will only be accepted by this destination if
; the remainder of the call mask is zeroes.
;
; Note that both call mask and call value are specified in hex.
;
; If the destination has no call mask or call value, answer with <RET>.
;
* 07.01 What is the call value? [S R:1.-32.]:
;
; Specify the call value that will be compared with the masked incoming
; call value to decide whether this destination will accept the call.
; The call value must be the same length as the call mask you have
; specified.
;
; <EOS> Do you want to:
*         <RET>-Continue, R-Repeat section, P-Pause, E-Exit.
```

6.4 Specify Logical Names for Remote DTEs

This section defines the logical names for all remote DTEs accessed by your system.

```
>; ==================================================================
>; PSI - Section 4 - Specify Logical Names for Remote DTEs
>; ==================================================================
>;
>* 01.00 Identify a remote DTE. [S R:0 -21.]:
>;
>; A remote DTE is identified by its address, assigned by the network
>; vendor. You can also associate a logical name with each remote DTE
>; address.
>;
>; Specify a remote DTE using the following format:
>;
>;      name,address
>;
>; where
>;
 ;      name          is the logical name you have chosen for the DTE, (up
>;                    to 6 characters).
>;
 ;      address       is the address assigned to the DTE by the network vendor.
>;
 ;
 ;
>; If you have specified all remote DTEs, answer with <RET>.
>;
 ; <EOS> Do you want to:
>*      <RET> -Continue, R - Repeat section, P - Pause, E - Exit.
```

6.5 Specify Required Components

This section defines the required PSI components. NETGEN displays Questions 1.00 through 5.00 only in Component Mode. If you are building X25ACP, NETGEN displays Question 6.00. Figure 6–4 illustrates the sequence of questions for specifying required components.

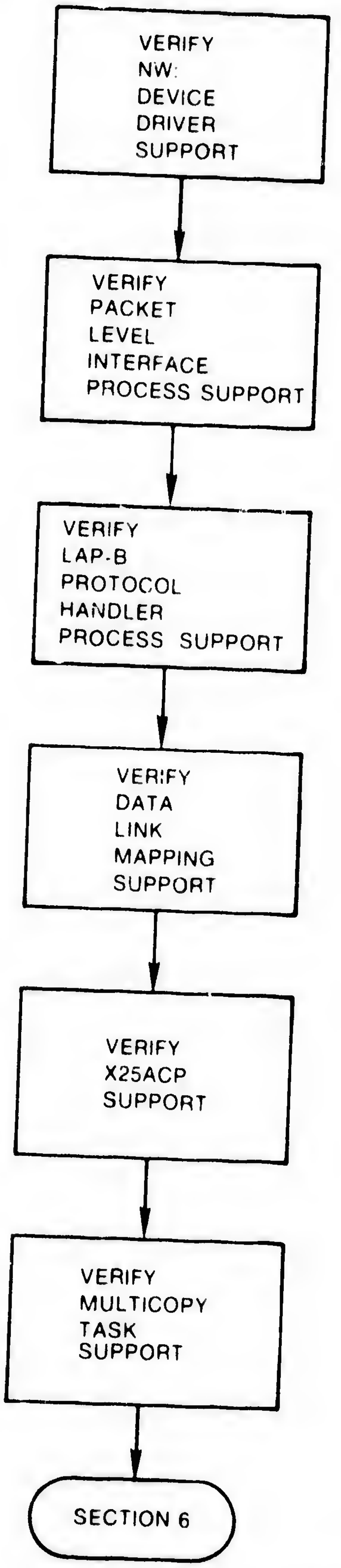
VERIFY NW: DEVICE DRIVER SUPPORT
VERIFY PACKET LEVEL INTERFACE PROCESS SUPPORT
VERIFY LAP-B PROTOCOL HANDLER PROCESS SUPPORT
VERIFY DATA LINK MAPPING SUPPORT
VERIFY X25ACP SUPPORT
VERIFY MULTICOPY TASK SUPPORT
SECTION 6

Figure 6–4: PSI – Section 5 – Specify Required Components

```
>; ==================================================================
>; PSI - Section 5 - Specify Required Components
>; ==================================================================
>;
>* 01.00 Do you want to build the NW process? [D=N] [Y/N]:
>;
>; The NW process interfaces with the X.25 level 3 protocol, interfaces
>; with user tasks via the QIO mechanism, validates user QIO requests,
>; passes on non-data transfer requests to X25ACP, and provides for
>; segmentation and recombination of data.
>;
>; Answer Y if you want to build the NW process.
>;
>* 02.00 Do you want to build the PLI process? [D=N] [Y/N]:
>;
>; The PLI process implements the X.25 level 3 protocol. It transmits
>; and receives data packets, multiplexes many virtual circuits on one
>; line, detects level 3 protocol errors, and controls allocation of
>; logical channel numbers.
>;
>; Answer Y if you want to build the PLI process.
>;
>* 03.00 Do you want to build the LAB process? [D=N] [Y/N]:
>;
>; The LAB process implements the X.25 level 2 protocol. It transmits
>; and receives data, starts up and shuts down lines, detects and records
>; errors, retransmits data if necessary, and traces frames that cross
>; the level 2 and device driver boundary.
>;
>; You require this process if you have specified the SDP and/or SDV device
>; drivers.
>;
>; Answer Y if you want to build the LAB process.
```

If you have specified SDP and/or SDV device driver processes, NETGEN displays Question 3.00.

```
>* 04.00 Do you want to build the X25ACP task? [D=N] [Y/N]:
>;
>; The X25ACP task supports the NW process by processing functions that
>; are not critical to system throughput. It connects and disconnects
>; calls, requests tasks for incoming calls, and notifies tasks of
>; network events.
>;
>; Answer Y if you want to build the X25ACP task.
>;
>* 05.00 Do you want to build the DLM process? [D=N] [Y/N]:
>;
>; The DLM process allows DECnet users to use X.25 to communicate with
>; remote DTEs on a PSN.
>;
>; Answer Y if you want to build the DLM process.
>;
>* 06.00 Do you want multicopy task support? [D=N] [Y/N]:
>;
>; Multicopy task support allows for multiple copies of a server task
>; connected by object type to be spawned. This feature permits users to
>; write single-threaded tasks that perform a network service and have
>; more than one request serviced at a time. The multicopy attribute can
>; be enabled/disabled on a "per object" basis with the SET OBJECT
>; command under NCP,CFE or VNP.
```

NETGEN displays Question 6.00 only if you are building the X25ACP task.

```
>; <EOS> Do you want to:
>*       <RET> - Continue, R - Repeat section, P - Pause, E - Exit.
```

6.6 Specify Optional Components

This section defines the optional PSI components you may want to build. Figure 6–5 illustrates the sequence of questions for specifying optional components.

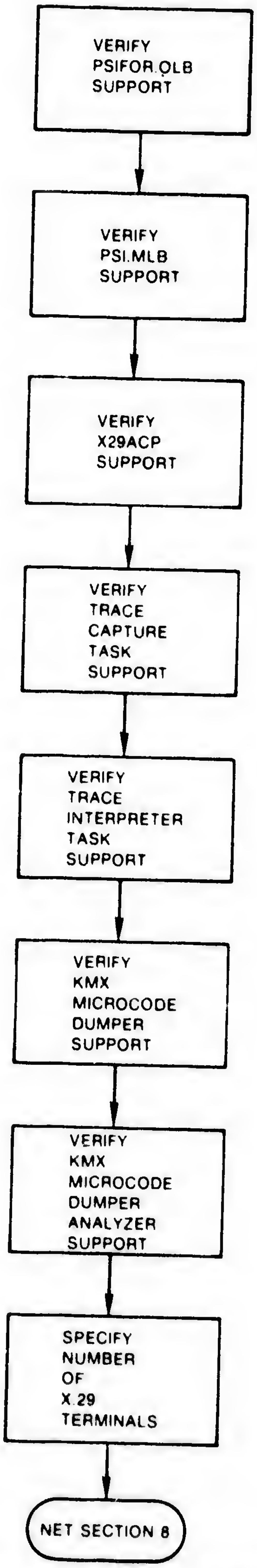
VERIFY PSIFOR.OLB SUPPORT
VERIFY PSI.MLB SUPPORT
VERIFY X29ACP SUPPORT
VERIFY TRACE CAPTURE TASK SUPPORT
VERIFY TRACE INTERPRETER TASK SUPPORT
VERIFY KMX MICROCODE DUMPER SUPPORT
VERIFY KMX MICROCODE DUMPER ANALYZER SUPPORT
SPECIFY NUMBER OF X.29 TERMINALS
NET SECTION 8

Figure 6–5: PSI – Section 6 – Specify Optional Components

```
>; ==============================================================
>; PSI - Section 6 - Specify Optional Components
>; ==============================================================
>;
>* 01.00 Do you want to include the PSIFOR.OLB library? [D=N] [Y/N]:
>;
>; If you want to write network tasks in FORTRAN, you must include the
>; PSIFOR.OLB library in your target system, so answer Y to this
>; question.
>;
>* 02.00 Do you want to include the PSI.MLB library? [D=N] [Y/N]:
>;
>; If you want to write network tasks in MACRO-11, you must include the
>; PSI.MLB library in your target system, so answer Y to this question.
```

If you chose X.29 support in PSI Section 1 Question 2, NETGEN displays Question 3.00.

```
>* 03.00 Do you want to build the X29ACP task? [D=N] [Y/N]:
>;
>; The X29ACP task supports the X.29 protocol. It handles incoming X.29
>; calls, and provides an interface with the CLI for unsolicited input
>; data.
>;
>; If you need support for remote X.29 terminals, answer Y to this
>; question.
>;
>* 04.00 Do you want to build the TRA task? [D=N] [Y/N]:
>;
>; The TRA task traces frames over a line and records the traced frames
>; on a disk. This helps you to find out what types of packets are being
>; transmitted and received on the line and thus to monitor its
>; performance.
>;
>; Answer Y if you want to build the TRA task.
>;
>* 05.00 Do you want to build the TRI task? [D=N] [Y/N]:
>;
>; The TRI task interprets the data produced by the TRA task so that you
>; can print the traced frames. If you want to write your own trace
>; interpreter task you need not include TRI in the system you are
>; building.
>;
>; Answer Y if you want to build TRI.
>;
>* 06.00 Do you want to build the DUK task? [D=N] [Y/N]:
>;
>; The DUK task dumps the KMX microcode onto a disk. You can then run the
>; KDA task to convert the dump to a printable format. You require these
>; tasks only if you have a KMX device.
>;
>; Answer Y if you want to build DUK.
>;
>* 07.00 Do you want to build the KDA task? [D=N] [Y/N]:
>;
>; The KDA task converts a KMX microcode dump on a disk into a printable
>; format. You require this task only if you have a KMX device.
>; Answer Y if you want to build KDA.
>;
>* 08.00 How many X.29 terminals can be active at once? [D R:1. -40.]:
>;
>; Specify the maximum number of X.29 terminals that you want to operate
>; simultaneously.
```

When NETGEN displays Question 8.00, do not specify a value that exceeds the number of HT: units you specified in DEC Section 6 Question 3.02.

(continued on next page)

```
>; <EOS> Do you want to:
>*       <RET> -Continue, R - Repeat section, P - Pause, E - Exit.
>;
>;
>; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
>;  PSI - PSI CEX Product Generation Procedure
 ;        All questions answered at time on date
>; = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =  = = = = = = = = = = = = = = = = = = = = = = = = =
```

NOTE

At this point, the network generation procedure proceeds to NET Section 8 (Chapter 4).

Chapter 7
Installing DECnet

This chapter describes how to install and load DECnet on various host systems. It also describes how to automate the installation procedure, and how to modify the network installation command file (NETINS.CMD) to meet certain needs.

7.1 Installing DECnet on RSX-11M/M-PLUS Systems

If you are ready to install and load the network tasks and components as produced by NETGEN, execute the network installation command file. To do this, enter:

```
@dduu:[x,1]NETINS.CMD
```

The variable *dduu:* refers to the target disk, and the variable *x* refers to the group code you specified in NET Section 1, Question 4.00.

If you do not want to execute the NETINS.CMD file produced by NETGEN because you want to automate the installation procedure, or because you want to modify this file to meet certain unique needs, refer to Section 7.1.1.

Figure 7-1 illustrates the installation procedure for an RSX-11M/11M-PLUS system using the NETINS.CMD file as produced by NETGEN.

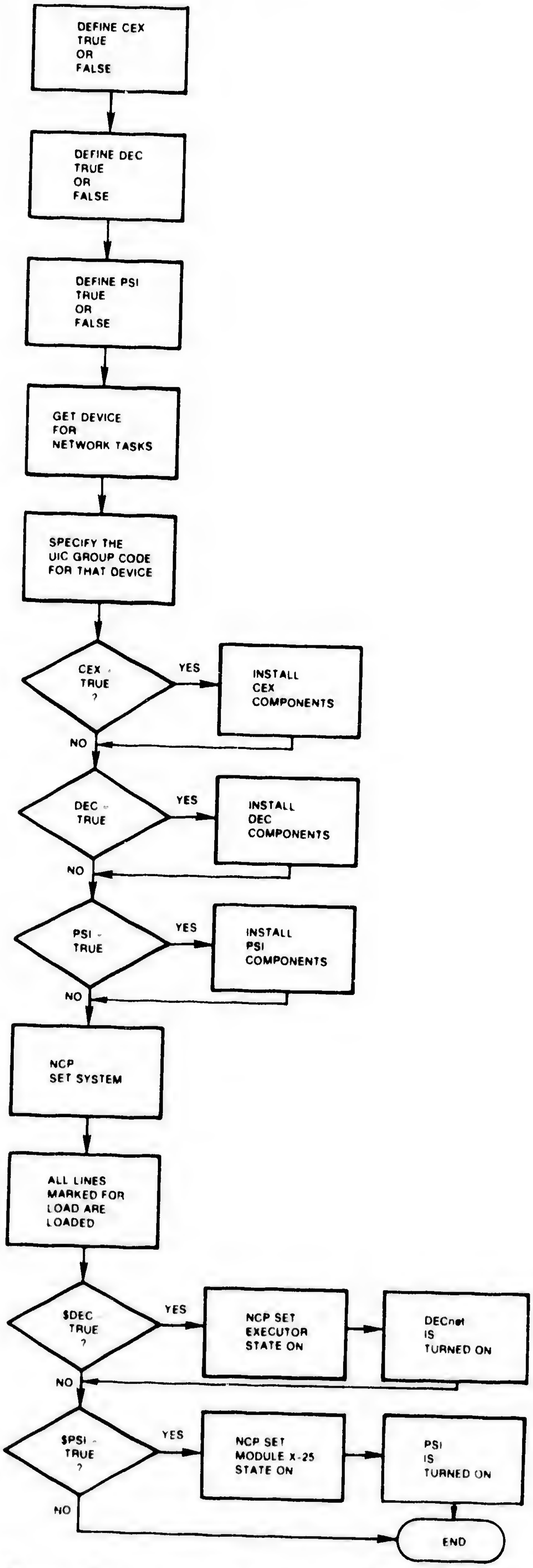

Figure 7–1: Installation Procedure for an RSX-11M/11M-PLUS System

NETINS.CMD displays the following five questions. If you do not have a license for PSI, Question 3 is not displayed.

1. `>* Do you want to install and load the CEX system? [Y/N]`

   If you want to install all tasks and load the network partitions and Communications Executive that are common to both DECnet and PSI, answer this question YES.

2. `>* Do you want to install and start DECnet? [Y/N]`

   If you want to install all DECnet-specific tasks, answer this question YES. This causes the network to be turned on. Any circuits marked for enable will be turned on. If you have already loaded DEC, answer this question NO.

   For more information on setting circuit states see the *DECnet-RSX Post Installation Checkout Procedures* manual.

3. `>* Do you want to install and start PSI? [Y/N]`

   If you want to use DECnet with Data Link Mapping (DLM) or you want to use the PSI User Interface, answer this question YES. Answering YES enables the PSI lines that have been previously marked for enable, and enables the X.25 Server. If you have already loaded PSI, answer this question NO.

4. `>* On what device are the network tasks? [D=dduu:]`

   Enter the name of the device for the NETGEN target disk where the network tasks are located.

5. `>* What is the network UIC group code? [D=xxx]`

   The variable *xxx* refers to the group code of the UIC you are currently in.

If you are bringing up the node for the the first time and you want to make sure the node was generated properly, consult the *DECnet-RSX Post Installation Checkout Procedures* manual for the proper testing procedure. For more information on the system management commands required to bring up a node, see the *DECnet-RSX System Manager's Guide*.

7.1.1 Modifying NETINS.CMD

If you want to modify the NETINS.CMD file to meet certain needs, you must edit NETINS.CMD. Any of the following changes require you to edit NETINS.CMD.

- Add a new component
- Install a task in a different partition
- Save DSR pool space
- Change the way a task is installed
- Install and start the network automatically

If you add a new component such as FAL, NFT, or TLK in Component Mode, you must add this component to the NETINS.CMD file.

If you want to install a task in a partition other than GEN, add /PAR= *xxxxxx* to the appropriate line. The variable *xxxxxx* refers to the new partition for the installed task. For example, to install NETACP in the partition ACPPAR, modify NETINS.CMD as follows:

```
INS XX:[371,054]NETACP/PAR=ACPPAR
```

In this case, the group code, 371, is a variable. For you, this group code number must be the value you specified in NET Section 1, Question 4.00.

If you want to save DSR pool space, you can prevent NETINS.CMD from installing certain tasks. To do this, place a semicolon (;) or a period and semicolon (.;) before the INS command on the line for that task. The semicolon (;) form causes the line to print, while the period and semicolon (.;) form does not. This procedure is preferable to deleting the line because you will retain a record of the original NETINS.CMD version. You can install these tasks later by using the appropriate MCR commands.

If you want to change the way a task is installed, you may need to edit the NETINS.CMD file. If you specified resident RMS in a previous generation, NETINS.CMD will automatically check to see if resident RMS was installed. If you are generating a version of FAL that does not require resident RMS, you should remove this check by editing the NETINS.CMD file.

If you want to install and start the network automatically, edit the NETINS.CMD file. To install CEX, DEC, and PSI products automatically, you must define the values $CEX, $DEC, and $PSI. If $CEX, $DEC, or $PSI are defined and set TRUE, NETINS.CMD installs and loads these products. If $CEX, $DEC, or $PSI are defined and set FALSE, NETINS.CMD does not install or load the product associated with any symbol set as FALSE.

After you define these values, specify the device name for the NETGEN target disk where the network tasks are located; then specify the network UIC.

If you define the products, the device name, and the network UIC, NETINS.CMD performs all functions without displaying any questions. If any of these are not defined, NETINS.CMD displays the appropriate question. To edit the NETINS.CMD file, add the following lines to the beginning of the file:

1. To define $CEX, $DEC, $PSI, enter:

   ```
   .SETT $CEX
   .SETT $DEC
   .SETT $PSI
   ```

   In this example, all values are defined TRUE. You can change these values (TRUE or FALSE) to meet your own needs.

2. To assign a device name (XX:) for the target disk device (*dduu:*), enter:

   ```
   ASN dduu:=XX:
   ```

   The target disk device (*dduu:*) contains the network tasks specified in NET Section 1, Question 2.00.

3. To define the network UIC group code, enter the following MCR command:

   ```
   MCR> SET /NETUIC=[x,54]
   ```

   Or, enter the following VMR command to the RSX-11M/11M-PLUS system image:

   ```
   VMR> SET /NETUIC=[x,54]
   ```

   The variable *x* refers to the group code specified in NET Section 1 Question 4.

4. Finally, to invoke the NETINS.CMD file, enter:

   ```
   MCR> @dduu:[x,1]NETINS.CMD
   ```

   The variable *x* refers to the group code specified in NET Section 1 Question 4.

If you follow this procedure, NETINS.CMD installs and loads the network software automatically.

7.1.2 Using VMR to Install Network Tasks

An optional way of starting the network is to use the Virtual Monitor Routine (VMR) commands to install network tasks. You can use individual VMR commands and/or you can edit the SYSVMR.CMD file. (See Section 3.2.11 for information about SYSVMR.CMD.)

Using VMR has two advantages over using the NETINS.CMD file:

1. VMR reduces startup time because the system already contains the tasks in installed form when booted.
2. Installing tasks with VMR minimizes fragmentation in the Dynamic Storage Region (DSR) pool.

The commands for VMR are essentially the same as the MCR commands used in NETINS.CMD. There are two exceptions: the CLI command, and the load command. The CLI command and the /HIGH switch of the load command are not supported in VMR. Instead of the LOA NM:/HIGH command used by NETINS.CMD, use the following command:

```
LOA NM:
```

The CLI command in NETINS.CMD that deals with RMTACP (CLI/INIT=RMTACP...) should be deleted and issued as a command to MCR.

For more information on Virtual Monitor Routine (VMR) commands, see the *RSX-11M/M-PLUS System Management Guide*.

7.2 Installing DECnet–11S Systems

To install DECnet on an RSX-11S system, use the Virtual Monitor Routine with NETINS.CMD. Then use VNP to load the network into the RSX-11S system image. For a description of down-line system loading or down-line task loading, see the *DECnet-RSX System Manager's Guide*.

7.2.1 Installing Tasks Using VMR Commands

To install tasks using VMR commands, do the following:

1. `MCR> SET /UIC=[1,64]`
2. Invoke the Virtual Monitor Routine; enter:

   ```
   MCR> VMR
   ```

3. VMR then prompts you to enter the RSX-11S system image filename:

   ```
   Enter filename: RSX11S.SYS
   ```

4. Invoke the NETINS.CMD file; enter:

   ```
   VMR> @dduu:[x,1]NETINS
   ```

The variable *dduu*: refers to the target disk and the variable *x* refers to the group code you specified in NET Section 1, Question 4.00. VMR executes the NETINS.CMD file and produces a preinstalled, ready-to-be-booted system image, but the network will not be usable unless you load it and turn it on with VNP before booting.

Example 7-1 displays a NETINS.CMD file for an RSX-11S system generated with all optional components. NTINIT and NETACP are required tasks. If RCP1, MLD, or KMCL appear in your command file, they are also required. Remaining tasks are optional. If you are installing EVC, you should load NM:. If you are installing SLD, you should load OV:.

Example 7-1: Typical NETINS.CMD for an RSX-11S System

```
SET /NETUIC=[xxx,64]
INS NTINIT/FIX=YES
INS MLD/FIX=YES
INS EVC/FIX=YES
INS NCP/FIX=YES
LOA NM:
INS NETACP/FIX=YES
INS RCP1/FIX=YES
INS NICE/CKP=NO/FIX=YES
INS EVR/FIX=YES
INS NTD/CKP=NO/FIX=YES
INS NTDEMO/CKP=NO/FIX=YES
INS MIR/CKP=NO/FIX=YES
INS SLD/FIX=YES
LOA OV:
INS FAL/CKP=NO/FIX=YES
INS RMT/CKP=NO/FIX=YE
INS RMTACP/FIX=YES
LOA HT:
INS RMHACP/CKP=NO/FIX=YES
INS TLK/CKP=NO/FIX=YES
INS LSN/FIX-YES
INS TCL/CKP=NO/FIX=YES
```

If you want to change the way tasks are installed, you must either modify the NETINS.CMD command file before using it with VMR, or at a later time, modify the system image with VMR.

1. If you are not installing SLD and loading OV:, you cannot down-line load or up-line checkpoint tasks. Tasks should be fixed in memory using the FIX=YES switch and installed as noncheckpointable. For example:

   ```
   INS RMT/CKP=NO/FIX=YES
   ```

2. If you are installing SLD and loading OV:, you can down-line load and/or up-line checkpoint tasks. In either case, do not use the FIX switch. NETGEN builds all tasks that can be checkpointed as checkpointable. If you want to install a task as checkpointable, do not specify a switch. For example:

   ```
   INS RMT
   ```

   If you want to install a task as noncheckpointable, specify /CKP=NO. For example:

   ```
   INS RMT/CKP=NO
   ```

7.2.2 Loading the Network Using VNP Commands

After using VMR to install your tasks, use the Virtual Network Processor (VNP) commands to load the network. To load tasks using VNP commands, do the following:

1. Enter:

   ```
   RUN dduu:[x,64]VNP
   ```

   The variable *dduu:* refers to the target disk and the variable *x* refers to the group code you specified in NET Section 1, Question 4.00.

2. VNP then prompts you to enter the RSX-11S system image filename:

   ```
   Enter filename: RSX11S.SYS
   ```

3. The following SET command will start the network and enable circuits which were requested to be enabled during NETGEN:

   ```
   VNP   SET SYSTEM
   VNP   SET EXECUTOR STATE ON
   ```

4. To load lines not previously set to ON, enter:

   ```
   VNP   SET LINE line id ALL
   ```

5. To enable circuits not previously set to ON, enter:

   ```
   VNP   SET CIRCUIT circuit id STATE ON
   ```

6. If you want to check the states of your lines and circuits, enter the following two commands:

   ```
   VNP   SHOW LINE line id
   VNP   SHOW CIRCUIT circuit id
   ```

For more information on using these commands see the *DECnet-RSX System Manager's Guide*.

After preparing the system image as just described, you have a ready-to-be-booted system image. If you need more information on how to boot or down-line load an RSX-11S system, refer to the *DECnet-RSX System Manager's Guide*.

7.3 Installing a DECnet-RSX-11S System on a VAX/VMS System

This procedure (intended for users who are installing DECnet-RSX-11S on a VMS Version 4.0 system) is very similar to the procedure described in Sections 7.2.1 and 7.2.2. There are two exceptions: you must have certain privileges set prior to running VMR and VNP, and you must also use a different command to set your UIC group code.

7.3.1 Establishing VAX/VMS Privileges

You must be logged into the VAX/VMS system with certain privileges in order to set up and run the RSX-11S network generation. You should have access to the following required privileges:

1. Change mode to kernel privilege (CMKRNL). This allows you to change default UICs and directories. You must have this privilege before you can set the remaining privileges.
2. Logical I/O privilege (LOG_IO). This privilege permits RSX-11M VMR to do logical I/O on task image files.
3. System protection privilege (SYSPRV). This privilege allows you to create files in directories not owned by the current UIC.

If you have the SETPRV privilege, you can establish the required privileges with the following MCR command:

```
> SET PROC/PRIV=(privilege[,...])
```

To find out what privileges you have, use the following MCR command:

```
> SHO PROC/PRIV
```

For more information on using these privileges, see the *VAX/VMS System Manager's Guide*.

7.3.2 Installing Tasks Using VMR Commands

After you have set your privileges, you can install tasks using VMR commands. The following steps permit you to begin this procedure on a VAX/VMS system.

1. Log in using the /CLI=MCR qualifier so that you can use MCR. For example:

   ```
   Username: SYSTEM/CLI=MCR
   Password:
   ```

2. Set up the required privileges (Section 7.3.1).
3. Mount the RSX-11S system disk and NETGEN target disk.

   ```
   > MOUNT dduu: label
   ```

4. Set your default disk and UIC to [*x*,64] on the target disk. For example:

   ```
   > SET DEF dduu:[1,64]
   ```

   The variable *x* refers to the UIC group code you specified in NET Section 1 Question 4.00.

5. Invoke the Virtual Monitor Routine; enter:

   ```
   > VMR
   ```

6. VMR then prompts you to enter the RSX-11S system image filename:

   ```
   Enter filename: RSX11S.SYS
   ```

7. Invoke the NETINS.CMD file; enter:

   ```
   VMR> @dduu:[x,1]NETINS
   ```

   The variable *dduu:* refers to the target disk and the variable *x* refers to the group code you specified in NET. VMR then executes the NETINS.CMD file.

7.3.3 Loading the Network Using VNP Commands

After setting up the required privileges and using VMR to install your tasks, use the Virtual Network Processor (VNP) commands to load the network. To load tasks using VNP commands, do the following:

1. Enter:

   ```
   RUN dduu:[x,64]VNP
   ```

   The variable *dduu:* refers to the target disk and the variable *x* refers to the group code you specified in NET Section 1, Question 4.00.

2. VNP then prompts you to enter the RSX-11S system image filename:

   ```
   Enter filename: RSX11S.SYS
   ```

3. The following SET command will start the network and enable circuits which were requested to be enabled during NETGEN:

   ```
   VNP> SET SYSTEM
   VNP> SET EXECUTOR STATE ON
   ```

4. To load lines not previously set to ON, enter:

   ```
   VNP> SET LINE line id ALL
   ```

5. To enable circuits not previously set to ON, enter:

   ```
   VNP> SET CIRCUIT circuit id STATE ON
   ```

6. If you want to check the states of your lines and circuits, enter the following two commands:

   ```
   VNP> SHOW LINE line id
   VNP> SHOW CIRCUIT circuit id
   ```

For more information on using these commands see the *DECnet-RSX System Manager's Guide*.

After preparing the system image as just described, you have a ready-to-be-booted system image. For a description on how to boot or down-line load an RSX-11S system, refer to the *DECnet-VAX System Manager's Guide*.

Chapter 8

Installing a Pregenned RSX-11M-PLUS End Node

This chapter applies only to users who are installing a pregenned RSX-11M-PLUS end node.

8.1 Preliminary Considerations

Your pregenned RSX-11M-PLUS distribution kit contains two system types. One system (the I-Space system) runs on a PDP-11/23 PLUS or a PDP-11/24 processor, located in UIC [1,54]. The other system (the Kernel Data-Space system) runs on a PDP-11/44 or PDP-11/70 processor, located in UIC [2,54]. As part of the RSX-11M-PLUS installation, you will have selected the appropriate system and deleted the other one.

Before running the DECnet installation procedure, it is recommended that you do the following:

1. Make a copy of your target disk. The target disk will be write enabled during this procedure.
2. Make sure you have enough free space (2200 blocks) to run this procedure.

To run the DECnet installation procedure, do the following:

1. Mount the DECnet-11M-PLUS distribution disk

   ```
   MCR> MOU dduu:ENDNODEKIT
   ```

2. Invoke the NETGEN command file by entering:

   ```
   @dduu:[137,10]NETGEN.CMD
   ```

   The variable *dduu* refers to the kit disk.

8.2 Dialog Format

The DECnet installation procedure consists of several questions, optional explanatory text, user responses to questions, and break responses.

8.2.1 Explanatory Text

During this procedure, you can read expanded information for a question. You elicit this text on a question-by-question basis by pressing the ESCAPE key ESC after the question is displayed. This causes the procedure to issue an explanation and then repeat the question.

8.2.2 User Responses

Your response to questions will be one of three types:

1. YES/NO
2. Numeric
3. Character string

Numeric responses are octal or decimal (Section 1.4.1.2).

Character string responses can include letters, numbers, and special characters (Section 1.4.1.2).

8.2.3 Break Responses

If you press CTRL/Z, the procedure displays the following options:

```
>; <EOS> Do you want to:
>*       <RET>-Continue, R-Repeat procedure, P-Pause, E-Exit [S]:
>;
>; <RET> -To continue with normal processing.
>; R     -Restart this section from the top
>; P     -Stop the generation temporarily, allowing access to MCR
>; E     -Terminate the generation
```

8.3 The Pregenned RSX-11M-PLUS Dialog

The pregenned RSX-11M-PLUS procedure displays the following dialog.

```
>;
>; ==================================================================
>;  NETGEN - Installation Procedure For Pregenned RSX-11M-PLUS End Nodes
>;           Started at time on date
>; ==================================================================
>;
>; 01.00 Do you want to see the NETGEN notes/cautions [D=N]? [Y/N]:
>;
>;
>; Note the following:
>; ------------------
>;
>; . This procedure installs the DECnet V2.0 software that will run with
>;   the pre-sysgenned RSX-11M-PLUS V2.1 system. The software installed
>;   by this procedure will not run with any other RSX-11M-PLUS system.
>;
>; . It is recommended that you back up your target disk before continu-
>;   ing since the disk will be write enabled during the NETGEN sequence.
>;
>; . Your target disk must have a minimum of 2200 blocks free.
>;
>; . The following installed tasks are required on your host system while
>;   you are performing your NETGEN:
>;
>;      PIP is always required
>;      LOA and UNL if device drivers require loading.
>;      MOU and DMO if disks require mounting.
>;      UFD if the required UICs do not already exist.
>;
>;   If these tasks are not already installed, and you are logged in as a
>;   privileged user, NETGEN will install them automatically. If NETGEN
>;   requires a task that it cannot install, it will pause to allow you
>;   to correct the situation.
>;
>; . For questions with defaults, the default may be selected by pressing
>;   a carriage return (<RET>) in response to the question.
>;
>; . Additional explanatory text for each question may be obtained by
>;   pressing the ESCAPE key.
>;
>; . It is possible to interrupt the network installation procedure by
>;   typing <CTRL/Z> in response to any question. You will then be given
>;   the options of either continuing, restarting the procedure from the
>;   beginning, temporarily pausing, or terminating the procedure.
>;
>* 02.00 Target system device? [dduu, D=SY00:] [S]:
>;
>; This device will contain all files required to run DECnet. This
>; includes all task files, data bases, command files, and generation
>; work files. This must be a Files-11 disk device. The trailing colon
>; (e.g. SY:) is optional. The default device is SY:.
>;
>* 03.00 UIC Group Code for DELnet? [O R:1-137 D:5] [S]:
>;
>; Specify the UIC Group Code under which all DECnet files will reside.
>; Work files, library files, object files, task files and data base
>; files will all appear under various user codes within this group (e.g.
>; [5,*]). Files which already exist under these UICs may be deleted or
>; purged.
>;
```

(continued on next page)

```
; Note that the user must have privileges to create, write, read, and
; delete all files under the chosen UIC Group Code.
;
* 04.00 Does your target system support Kernel data space [D=N]? [Y/N]:
;
; Your RSX-11M-PLUS distribution Kit contained two system images. Based on
; the processor you are using, you must have decided which of the two
; systems images to use. If you have chosen to run the system image that
; supports Kernel data space, answer this question YES. Otherwise answer
; this question NO.
;
* 05.00 What is the target node name? [S R:0-6]: [S]:
;
; Enter the node name for the DECnet node being generated. This must be
; 1 to 6 alphanumeric characters, at least one of which must be an
; alphabetic (A-Z).
;
; Although it is not required, it is highly recommended that this name
; be used by all other nodes in the network to identify this node.
;
* 05.01 What is the target node address? [D R:1.-1023. D:1.]:
;
; Enter the node address for the node being generated. This must be a
; number in the range 1 to 1023.
;
; This number will be the identification for this node within the
; network, and must be unique among all of the nodes in the network.
;
; More efficient operation can be obtained by setting the addresses of
; the nodes in the network in the range 1 to the number of nodes. The
; highest node address would then be equal to the number of nodes in the
; network.
;
* 05.02 Target node ID? [D=None] [S R:0.-32.]:
;
; Enter the ID string for the node being generated. This string may be
; from 0 to 32 characters. Note that this string must not contain any
; single-quote ('), double-quote ("") or comma (,) characters.
;
; The node ID may be any arbitrary string which is useful in identifying
; the node.
;
* 06.00 Remote node name [<RET>=Done] [S R:0-6]:
;
; You may, at this time, define a series of node names which correspond
; to nodes in your network. When the network is loaded, these node
; names will automatically be set. Enter a <RET> when you have no more
; remote node names to define.
;
; Each node name will be assigned to a node address. Standard procedure
; is to start with the node name for the lowest node address used, and
; to progress from there to the highest node address.
;
; It is recommended that each node in the network assign the same node
; name to each individual node, reducing the confusion of moving from
; node to node.
;
; Remote node names may be added or deleted using NCP, or CFE.
;
* 06.01 Remote node address [D R:1.-1023. D:1.]:
;
; Enter the node address that node-name has been assigned in the network.
;
; Each node address defines a unique node in the network, and must be
; assigned when the network is first set up.
```

The variable *node-name* refers to the name you specified in Question 5.00.

(continued on next page)

```
* 07.00 Device Driver Process name [S R:0-3]:
;
; The Device Driver Module (DDM) Process name identifies a process
; which controls an I/O device.
;
; The legal DECnet device driver process names for a UNIBUS processor are:
;
; Name Physical device           Name    Physical device
; ---- ---------------           ----    ---------------
; DMC  DMC11 or DMR11            DL      DL11
; DMP  DMP11                     DZ      DZ11
; DUP  DUP11
; PCL  PCL11
; UNA  DEUNA
;
; The legal DECnet device driver process names for a Q-BUS processor are:
;
; Name Physical device           Name    Physical device
; ---- ---------------           ----    ---------------
; DMV  DMV11                     DLV     DLV11
; DPV  DPV11                     DZV     DZV11
; QNA  DEQNA
;
* 07.01 CSR address for dev-x? [O R:160000-177774]:
;
; Specify the Control/Status Register (CSR) address for the controller.
;
; Note that the CSR address may later be changed with CFE, NCP or VNP.
;
* 07.02 Vector address for dev-x [O R:4-774]:
;
; Specify the interrupt vector address for the controller.
;
; Note that the vector address may later be changed with CFE or NCP.
;
* 07.03 Is dev-x a DL11-WA? [D=N] [Y/N]:
;
; Answer the question YES only if the device is a DL11-WA. The DL11-WA
; is the only DL11 option that doesn't allow the Clear To Send signal
; either to pass through the interface or to be set with a jumper.
```

Question 7.03 is displayed for DL11 devices only.

(continued on next page)

Questions 7.04 and 7.05 are displayed for asynchronous devices only.

```
* 07.04 Is modem signal monitoring required for dev-x [D=N]? [Y/N]:
;
; If the line is connected to a modem for a dial-up switched circuit
; service, you should select modem monitoring. Modem signal monitoring
; checks the Carrier Detect signal (CD or CAR) for asynchronous lines.
;
; If this signal is missing for two consecutive samples, taken at one
; second intervals, the line will be declared "down" without waiting for
; a DECnet protocol to detect the failure.
;
; If your modem supports this signal and you wish modem monitoring,
; answer this question YES.
;
* 07.05 Does the modem switch carrier with Request To Send [D=N]? [Y/N]:
;
; It is necessary to distinguish asynchronous line modems which present
; continuous carrier once the connection is established, such as the
; BELL 103 or BELL 212, from those which switch carrier along with
; Request To Send, such as the BELL 202.
;
; Answer the question YES if you are using a BELL 202 modem or an
; equivalent.
;
* 07.06 Is dev-x a multipoint tributary [D=N]? [Y/N]:
;
; Answer this question YES, only if the line is a tributary on a
; multipoint line.
```

If you answer Question 6.06 YES, the procedure displays Question 6.07.

```
* 07.07 What is the tributary address of dev-x? [Y/N]:
;
; Specify the tributary address which is to identify this multipoint
; tributary to the multipoint master. Each multipoint tributary must be
; identified by a unique tributary address.
;
; Note that the tributary address may later be changed with CFE, NCP.
```

Question 7.08 is displayed for PCL devices only.

```
* 07.08 What is the TDM bus address for dev-x? [Y/N]:
;
; Specify the address used by the local PCL to communicate with the
; PCL on the other system. This is the PCL's address on the Time
; Division Multiplexed (TDM) bus. This address must be the same address
; that was set in the PCL's hardware during installation.
;
* 08.00 Do you want the Satellite Support Components [D=N]
;
; The DECnet Satellite Support Components are:
;
;       DLL     - The down-line system loader, host component
;       DUM     - The up-line system dumper, host component
;       CCR     - The Console Carrier Requester, host component
;       HLD     - The down-line task loader, host component
;
; If you answer YES to this question, all of the Satellite Support
; Components will be generated. If you answer NO to this question, none
; of the Satellite Support Components will be generated.
```

CCR will be displayed here only if you specified an Ethernet device in Question 7.00 of this procedure.

(continued on next page)

```
; =========================================================================
;  NETGEN - Installation Procedure For Pregenned RSX11-M-PLUS End-Nodes
;           Question/answer section completed at time on date
; =========================================================================
;
; All the questions have been answered. The installation procedure will
; now move the required files onto your target disk. This may take from
; five to ten minutes to complete, depending on the system you are
; running on.
;
; Copying the CEX Components
; Copying the CEX Support Components
; Copying the System Management Utilities
; Copying the DECnet Communications Components
; Copying the DECnet Network Management Components
; Copying the DECnet File Utilities
; Copying the DECnet Terminal Utilities
; Copying the DECnet Satellite Support Components
;
; Creating NETCFE.CMD, the Network Configuration Command file.
; Creating NETCFG.TXT, the Network Configuration Description file.
; Creating NETINS.CMD, the Network Installation Command file.
; Creating NETREM.CMD, the Network Removal Command file.
;
; =========================================================================
;  NETGEN - Installation Procedure For Pregenned RSX11-M-PLUS End-Nodes
            The file move phase completed at time on date
; =========================================================================
;
;
; Your DECnet software should now be on your target disk. If there were
; any errors reported while the software was being moved to the target
; disk, correct the problem and rerun the installation procedure. Your
; system configuration is the following:
;
;
;   The line parameters are:
;
;       Device=device name, full or half duplex, synch or asynch
;       CSR=csr, Vector=vector, Priority=device priority
;       Speed=speed, State=ON
;
;   The Executor parameters are:
;
;       Node name=name, Address=node address
;       Maximum links=max links, Maximum hops=max hops
;
;   The System parameters are:
;
;       Maximum control buffers=xxx, Minimum receive buffers=yyy
;       Maximum large buffers=zzz, Large buffer size=nnn
;
; If you want to change any of these parameters in the permanent data
; base, use the following CFE commands:
;
;   DEFINE LINE      - will change the line parameters
;   DEFINE CIRCUIT   - will change circuit parameters (none were listed above)
;   DEFINE EXECUTOR  - will change the executor parameters
;   DEFINE SYSTEM    - will change the system parameters
;
; See the DECnet-RSX System Managers's Guide for more details on CFE or NCP
; commands.
;
```

(continued on next page)

```
>; The startup file that was provided with your RSX-11M-PLUS system may
>; be set up to deallocate the DECnet Communications Executive. If this
>; is still in your startup procedure, change it so the DECnet
>; Communications Executive is not deallocated, the next time your system
>; is booted. The startup file also indicates how to install DAPRES. If
>; you want RMS access to remote files, install DAPRES as indicated in
>; the startup file.
>;
>; Once you are satisfied with the configuration, you may bring up your
>; network by:
>;
>;      Setting up the network UIC with the SET /NETUIC=[xxx,54] command,
>;      then invoke dduu:[xxx,001]NETINS.CMD. The network UIC may also
>;      be permanently set with VMR.
>;
>;==========================================================================
>;  NETGEN - RSX-11M-PLUS Pregenned End Node Installation Procedure
>;                Stopped at time and date
>;==========================================================================
>;
>@ EOF
```

Appendix A
Sample NETGEN Dialog

The following is a sample NETGEN for a combined DECnet-11M/PSI system if you are using the UNIBUS. If you do not have a license for the PSI product, the PSI section of the procedure is not displayed.

```
@DL:[137,10]NETGEN
>;
>; ====================================================================
>;  NET - RSX-11M/S CEX System Generation Procedure
>;        Started at 23:41:37 on 25-AUG-83
>; ====================================================================
>;
>; Copyright (C) 1981, 1982, 1983 by
>; Digital Equipment Corporation, Maynard, Mass.
>;
>; Generate a CEX System, Version 04.00, Base Level 20, for
>; your RSX-11M/S target system.
>;
>; The following CEX Products may be generated
>;      DECnet
>;      PSI
>;
>; The distribution kits must be up  to  the  current  patch  level.  If
>; necessary, you should stop the  generation  and  apply  the  necessary
>; patches.
>;
>; The logical device name LB: should already be assigned to  the  device
>; which contains the library files for the system  you  are  generating.
>; These files are EXELIB.OLB, EXEMC.MLB,  RSXMAC.SML,  SYSLIB.OLB,  and,
>; for RSX-11S, 11SLIB.OLB.
>;
>; The logical device names IN:, OU:, LS: and MP: should not be  assigned
>; to any devices before starting the generation.  These  logical  device
>; names are used by NETGEN to refer to various  disks  used  during  the
>; generation.
>;
>;
>; <EOS>  Do you want to:
>*       <RET>-Continue, E-Exit [S]:
>;
>;
```

(continued on next page)

```
>; ==================================================================
>;  NET - Section  1 - General Initialization
>; ==================================================================
>;
>* 01.00 Do you want to see the NETGEN notes/cautions [D=N]? [Y/N]:
>* 02.00 Target system device [dduu, D=SY00:] [S]: DB1
>* 03.00 Listing/map device [dduu, D=None] [S]: DB1
>* 04.00 UIC Group Code for NETGEN output [O R:1-377 D:5]: 110
>;
>; Checking for required library files, tasks, and UICs.
>;
>;
>; Creating UFD for DB01:[110,001]
>; Creating UFD for DB01:[110,010]
>;
>* 07.00 User ID for saving new responses [D=None] [S R:0.-30.]: DECNET/PSI
>* 08.00 Is this generation to be a dry run [D=N]? [Y/N]:
>* 09.00 Do you want a standard function network [D=N]? [Y/N]:
>* 10.00 Should all components be generated [D=N]? [Y/N]: Y
>* 11.00 Should old files be deleted [D=N]? [Y/N]: Y
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; ==================================================================
>;  NET - Section  2 - Define the target system
>; ==================================================================
>;
>* 02.00 RSXMC.MAC location (ddu:[g,m], D=DB01:[011,010]) [S]:
>;
>; DB01:[011,010]RSXMC.MAC is being copied to DB01:[110,010]RSXMC.MAC
>;
>;
>; DB01:[110,010]RSXMC.MAC is being scanned to define your target system.
>; This may take up to several minutes.
>;
>; The target is an RSX-11M system, with...
>;      A 20K-Executive
>;      Extended memory support (more than 124K words of memory)
>;      UMR support
>;      Multi-user protection
>;      Powerfail recovery support
>;      Dynamic task checkpoint allocation
>;      PLAS support
>;      Queue Manager (QMG) support
>;
>; Checking for required library files and tasks.
>;
>;
>; Creating UFD for DB01:[110,024]
>; Creating UFD for DB01:[110,034]
>; Creating UFD for DB01:[110,054]
>;
>* 04.00 RSX11M.STB location (ddu:[g,m], D=DB01:[001,054]) [S]:
>;
>; DB01:[001,054]RSX11M.STB is being copied to DB01:[110,054]RSX11M.STB
>;
>* 06.00 Should tasks link to the Memory Resident FCS library [D=N]? [Y/N]: Y
>* 07.01 Generate the DECnet product [D=N]? [Y/N]: Y
>;
>; Routing or non-routing nodes can be generated from your distibution kit.
>;
>* 07.02 Generate the PSI product [D=N]? [Y/N]: Y
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
```

(continued on next page)

```
>; ==================================================================
>;  NET - Section  3 - Define the system lines
>; ==================================================================
>;
>* 01.00 Device Driver Process name [<RET>=Done] [S R:0-3]:
>;
>; The Device Driver Module  (DDM)  Process  name  identifies  a  process
>; which controls an I/O device.  Enter a carriage return when there  are
>; no more devices to support.
>;
>; The legal DECnet device driver process names are:
>;
>; Name Physical device          Name    Physical device
>; ---- ---------------          ----    ---------------
>; DMC  DMC11 or DMR11           DL      DL11
>; DMP  DMP11                    DZ      DZ11
>; DU   DU11                     KDZ     KMC11/DZ11
>; DUP  DUP11                    PCL     PCL11
>; DV   DV11
>; KDP  KMC11/DUP11
>; UNA  DEUNA
>; DLM  PSI Data link mapping
>;
>;
>; The legal PSI device driver process names are:
>;
>; Name  Physial device
>; ----  --------------
>; SDP   DUP11
>; KMX   KMS11
>; SDV   DPV11  (Q-Bus device,e.g. 11/23,11/23b)
>;
>* 01.00 Device Driver Process name [<RET>=Done] [S R:0-3]: DMC
>* 02.00 How many DMC controllers are there [D R:1.-14. D:1.]: 2
>* 02.01 Are all DMCs installed at the same device priority [D=N]? [Y/N]: Y
>* 02.02 What is the DMC device priority [O R:4-6 D:5]:
>;
>* 03.01 CSR address for DMC-0 [O R:160000-177777 D:177777]: 160100
>* 03.02 Vector address for DMC-0 [O R:0-774 D:0]: 320
>;
>* 04.00 Is DMC-0 a FULL or HALF duplex line [D=FULL] [S]:
>* 04.01 Line speed for DMC-0 [D R:50.-56000. D:56000.]:
>* 04.07 Set the state for DMC-0 ON when loading the network [D=N]? [Y/N]:
>;
>; The line owner is DECnet
>;
>;
>* 03.01 CSR address for DMC-1 [O R:160000-177777 D:160110]:
>* 03.02 Vector address for DMC-1 [O R:0-774 D:330]:
>;
>* 04.00 Is DMC-1 a FULL or HALF duplex line [D=FULL] [S]:
>* 04.01 Line speed for DMC-1 [D R:50.-56000. D:56000.]: 19200
>* 04.07 Set the state for DMC-1 ON when loading the network [D=N]? [Y/N]: Y
>;
>; The line owner is DECnet
>;
>;
>* 01.00 Device Driver Process name [<RET>=Done] [S R:0-3]: DUP
>* 02.00 How many DUP controllers are there [D R:1.-14. D:1.]:
>;
>* 03.01 CSR address for DUP-0 [O R:160000-177777 D:177777]:
>* 03.02 Vector address for DUP-0 [O R:0-774 D:0]:
>* 03.03 Device priority for DUP-0 [O R:4-6 D:5]:
>;
>* 04.00 Is DUP-0 a FULL or HALF duplex line [D=FULL] [S]:
>* 04.01 Line speed for DUP-0 [D R:50.-9600. D:9600.]:
>;
>; The line owner is DECnet
>;
>* 06.00 Is DUP-0 multipoint [D=N]? [Y/N]:
```

(continued on next page)

```
>;
>* 01.00 Device Driver Process name [<RET>=Done] [S R:0-3]: UNA
>* 02.00 How many UNA controllers are there [D R:1.-14. D:1.]:
>;
>* 03.01 CSR address for UNA-0 [O R:160000-177777 D:174510]:
>* 03.02 Vector address for UNA-0 [O R:0-774 D:120]:
>* 03.03 Device priority for UNA-0 [O R:4-6 D:5]:
>;
>* 04.07 Set the state for UNA-0 ON when loading the network [D=N]? [Y/N]: Y
>;
>; The line owner is DECnet
>;
>;
>* 01.00 Device Driver Process name [<RET>=Done] [S R:0-3]: DLM
>* 02.00 How many DLM controllers are there [D R:1.-14. D:1.]:
>;
>* 04 07 Set the state for DLM-0 ON when loading the network [D=N]? [Y/N]:
>;
>; The line owner is DECnet
>;
>* 06.08 How many tributaries should DLM-0 support [D R:1.-32. D:1.]: 4
>* 06.09 Does DLM-0.0 define a Switched Virtual Circuit (SVC) [D=N]? [Y/N : Y
>* 06.10 Will DLM-0.0 be used for incoming calls [D=N]? [Y/N]: Y
>* 06.12 Requested packet size for DLM-0.0 [D R:0.-1024. D:0.]:
>* 06.13 Requested window size for DLM-0.0 [D R:0.-7. D:0.]:
>* 06.09 Does DLM-0.1 define a Switched Virtual Circuit (SVC) [D=N]? [Y/N]: Y
>* 06.10 Will DLM-0.1 be used for incoming calls [D=N]? [Y/N]:
>* 06.11 DTE Address which DLM-0.1 calls [D=None] [S R:0.-16.]: 31108838888004
>* 06.12 Requested packet size for DLM-0.1 [D R:0.-1024. D:0.]:
>* 06.13 Requested window size for DLM-0.1 [D R:0.-7. D:0.]:
>* 06.09 Does DLM-0.2 define a Switched Virtual Circuit (SVC) [D=N]? [Y/N]: Y
>* 06.10 Will DLM-0.2 be used for incoming calls [D=N]? [Y/N]: Y
>* 06.12 Requested packet size for DLM-0.2 [D R:0.-1024. D:0.]:
>* 06.13 Requested window size for DLM-0.2 [D R:0.-7. D:0.]:
>* 06.09 Does DLM-0.3 define a Switched Virtual Circuit (SVC) [D=N]? [Y/N]:
>;
>* 01.00 Device Driver Process name [<RET>=Done] [S R:0-3]: SDP
>* 02.00 How many SDP controllers are there [D R:1.-14. D:1.]:
>;
>* 03.01 CSR address for SDP-0 [O R:160000-177777 D:177777]: 160050
>* 03.02 Vector address for SDP-0 [O R:0-774 D:0]: 310
>* 03.03 Device priority for SDP-0 [O R:4-6 D:5]:
>;
>* 04.05 Is modem signal monitoring required for SDP-0 [D=N]? [Y/N]: Y
>* 04.07 Set the state for SDP-0 ON when loading the network [D=N]? [Y/N]:
>;
>;
>; The line owner is PSI
>;
>;
>* 01.00 Device Driver Process name [<RET>=Done] [S R:0-3]:
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
```

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```
>; =================================================================
>;  NET - Section  4 - Define the CEX System
>; =================================================================
>;
>; Creating build files for CEX, the communications executive.
>;
>* 01.00 Base address for partition CEXPAR [O R:14000-113500 D:113000]:
>* 01.01 Length of partition CEXPAR [O R:4300-5000 D:5000]:
>;
>; Network events will be logged.
>;
>; Creating build files for STCRC, the CRC16 calculation routine.
>;
>* 02.00 Does the target system have a KG-11 [D=N]? [Y/N]: Y
>;
>; Creating build files for CETAB, the CEX configuration tables.
>;
>; Creating build files for the DDMs, the device driver modules.
>;
>;      DMC
>;      DUP
>;      UNA
>;      DLM
>;      SDP
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; =================================================================
>;  NET - Section  5 - Define the Comm Exec Support Components
>; =================================================================
>;
>; Creating build files for NTINIT, the network initializer.
>;
>; Creating build files for NTL, the network loader.
>;
>; Creating build files for MLD, the general microcode loader.
>;
>; Creating build files for EVL/EVC, the event logger and collector.
>;
>* 06.01 How many Event Buffers should EVL use [D R:4.-50. D:6.]:
>* 06.02 Should EVC support file event logging [D=N]? [Y/N]: Y
>* 06.03 Should EVC support monitor event logging [D=N]? [Y/N]: Y
>* 06.04 Should EVC support remote event logging [D=N]? [Y/N]: Y
>;

>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; =================================================================
>;  NET - Section  6 - Define the System Management Utilities
>; =================================================================
>;
>; Creating build files for NCP, the network control program.
>;
>; Creating build files for NMVACP  and  NMDRV,  the  Network  Management
>; Volatile ACP and driver.
>;
>; Creating build files for CFE, the configuration file editor.
```

(continued on next page)

```
>;
>; Creating build files for NDA, the network dump analyzer.
>;
>; Creating build files for VNP, the virtual network control program.
>;
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; ======================================================================
>;  NET - Section  7 - Define the CEX Products
>; ======================================================================
>;
>; Questions concerning the following CEX Products will now be asked.
>;
>;      DECnet
>;      PSI
>;
>;
>; ======================================================================
>;  DEC - DECnet CEX Product Generation Procedure
>;        Starting questions at 00:00:24 on 26-AUG-83
>; ======================================================================
>;
>; Copyright (C) 1981, 1982, 1983 by
>; Digital Equipment Corporation, Maynard, Mass.
>;
>; Generate the DECnet CEX Product for your RSX-11M target
>; System.
>;
>; ======================================================================
>;  DEC - Section  1 - Define the target and remote nodes
>; ======================================================================
>;
>* 01.00 What is the target node name [S R:0-6]: BOSTON
>* 02.00 What is the target node address [D R:1.-1023.]: 16
>* 03.00 Target node ID [D=None] [S R:0.-32.]: DECNET/PSI
>* 04.00 Do you want to generate a routing node [D=N]? [Y/N]: Y
>* 05.00 Highest node address in the network [D R:16.-1023. D:16.]: 300
>;
>; To include support for remote terminals and products layered on DECnet
>; you must first include the required extended network support.
>;
>* 06.00 Do you want to include this extended network support [D=N]? [Y/N]:
>* 07.00 Remote node name [<RET>=Done] [S R:0-6]: LONDON
>* 07.01 Remote node address [D R:1.-300. D:1.]: 15
>;
>* 07.00 Remote node name [<RET>=Done] [S R:0-6]:
>;
>; The DECnet MACRO user library and FORTRAN/COBOL/BASIC+2  library  will
>; be included.
>;
>;
>; The DECnet MACRO user library will  be  placed  on  your  target  disk
>; as 'DB01:[1,1]NETLIB.MLB'.
>;
>; The DECnet FORTRAN/COBOL/BASIC+2 object library will be placed on your
>; target disk  as 'DB01:[1,1]NETFOR.OLB'.
>;
>; If necessary, please move them to  the  library  disk  (LB:)  on  your
>; target system, if this is different from your target disk (DB01:).
>;
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
```

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```
>; ==================================================================
>;  DEC - Section  2 - Define the DECnet Communications Components
>; ==================================================================
>;
>; Creating build files for XPT, the transport process.
>;
>; Creating build files for RCP, the routing event processing task.
>;
>; Creating build files for ECL, the network services process and driver.
>;
>; Creating build files for NETACP, the network services ACP.
>;
>* 04.01 Should NETACP be checkpointable [D=N]? [Y/N]:
>;
>; Creating build files for DCP, the DDCMP line protocol process.
>;
>; Creating build files for EPM, the Ethernet protocol manager process.
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; ==================================================================
>;  DEC - Section  3 - Define the DECnet Network Management Components
>; ==================================================================
>;
>; Creating build files for NICE, the  network  information  and  control
>; server task.
>;
>; Creating build files for EVR, the network event receiver task.
>;
>* 03.01 Include file event logging [D=N]? [Y/N]: Y
>* 03.02 Include monitor event logging [D=N]? [Y/N]: Y
>;
>; Creating build files for NTD, the node state display task.
>;
>; Creating build files for NTDEMO, the node state display server task.
>;
>; Creating build files for LIN, the link watcher task.
>;
>; Creating build files for LOO, the loop test sender task.
>;
>; Creating build files for MIR, the loop test mirror task.
>;
>; Creating build files for NVP, the network connect verification task.
>;
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
```

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```
>; =====================================================================
>;  DEC - Section  4 - Define the DECnet Satellite Support Components
>; =====================================================================
>;
>* 02.00 Do you want the Satellite Support Components [D=N]? [Y/N]: Y
>;
>; Creating build files  for  DLL,  the  down-line  system  loader,  host
>; component.
>;
>; Creating  build  files  for  DUM,  the  up-line  system  dumper,  host
>; component.
>;
>; Creating  build files  for  CCR,  the  console carrier requester, host
>; component.
>;
>; Creating  build  files  for  HLD,  the  down-line  task  loader,  host
>; component.
>;
>* 05.01 Number of incoming connections to support [D R:1.-32. D:4.]:
>;
>; To generate the HLD data base which describes the tasks  to  down-line
>; load, you may execute the HLDDAT.CMD command  procedure  at  any  time
>; after your network generation is complete.  This command file will  be
>; located as follows.
>;
>;       DB01:[110,001]HLDDAT.CMD
>;
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; =====================================================================
>;  DEC - Section  5 - Define the DECnet File Utilities
>; =====================================================================
>;
>; Creating build files  for  NFT, the network file access user task.
>;
>; Creating  build  files  for  FTS,  the  network  file  access  spooler
>; user task.
>;
>; Creating build files for FAL, the network file access server.
>;
>* 04.01 Should FAL support RMS file access [D=Y]? [Y/N]: Y
>* 04.02 Should FAL be overlayed [D=N]? [Y/N]: Y
>* 04.04 Do you want to use the memory resident RMS library [D=N]? [Y/N]: Y
>* 04.06 Number of incoming connections to support [D R:1.-10. D:4.]:
>* 04.07 User data buffer size [D R:260.-1024. D:512.]:
>;
>; Creating build files for MCM,  the  network  command  file  submission
>; server.
>;
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; =====================================================================
>;  DEC - Section  6 - Define the DECnet Terminal and Control Utilities
>; =====================================================================
>;
>; Creating build files for RMT and RMTACP, the remote  network  terminal
>; task and ACP.
>;
>* 02.01 Maximum number of simultaneous RMT users [D R:1.-15. D:4.]:
>;
>; Creating build files for HT: and RMHACP, the remote  network  terminal
>; driver and ACP.
>;
>* 03.01 Number of incoming connections to support [D R:1.-16. D:4.]:
>* 03.02 Number of HT: units to generate [D R:4.-64. D:4.]: 6
```

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```
>;
>; Creating build files for TLK, the remote talk user task.
>;
>; Creating build files for LSN, the remote talk server task.
>;
>; Creating build files for TCL, the remote task control server task.
>;
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; ===============================================================
>;  DEC - DECnet CEX Product Generation Procedure
>;        DECnet question/answer section completed at 00:10:22 on 26-AUG-83
>; ===============================================================
>;
>;
>; ===============================================================
>;  PSI - PSI CEX Product Generation Procedure
>;        Starting questions at 00:10:41 on 26-AUG-83
>; ===============================================================
>;
>; Copyright (C) 1978, 1979, 1980, 1981 by
>; Digital Equipment Corporation, Maynard, Mass.
>;
>; Generate the PSI CEX Product for your RSX-11M target
>; system.
>;
>; ===============================================================
>;  PSI - Section 1 - Specify target network characteristics
>; ===============================================================
>;
>* 01.00 Public Packet Switching Network name ? [S]: TELENET
>* 02.00 Do you want X29 support [D=N]? [Y/N]:  Y
>* 03.00 What is the transport subaddress range [S R:0.-9.]:  2-5
>;
>; <EOS> Do you want to:
>*    <RET> - Continue, R - Repeat section, P - Pause, E - Exit. [S]:
>;
>; ===============================================================
>;  PSI - Section 2 - Specify local DTEs
>; ===============================================================
>;
>;
>;
>* 01.00 What is the local DTE address [S R:0.-15.]:  311088888888
>* 02.00 Which line is associated with this  DTE [S R:1.-9.]:  SDP-0
>* 03.00 How many virtual circuits can be active at once? [D R:1.-255.]:  30
>* 04.00 What channels can be used for outgoing calls [S]:  30-20
>;
>; Specify PVCs for this DTE.
>;
>; Note that any DLM PVCs must also be included.
>;
>; The following DLM circuits have been generated:
>; DLM-0.0 S
>; DLM-0.1 S
>; DLM-0.2 S
>; DLM-0.3
>;
>* 05.00 Enter a PVC used by this DTE [S]:  PVC1,3
>* 05.00 Enter a PVC used by this DTE [S]:  PVC2,4
>* 05.00 Enter a PVC used by this DTE [S]:  DLM-0.3,5
>* 05.00 Enter a PVC used by this DTE [S]:
>* 06.00 Enter a closed user group for this DTE [S]:
>;
>;
>* 01.00 What is the local DTE address [S R:0.-15.]:
>;
```

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```
>; <EOS> Do you want to:
>*    <RET> - Continue, R - Repeat section, P - Pause, E - Exit [S]:
>;
>; ================================================================
>;  PSI - Section 3 - Specify incoming call destinations
>; ================================================================
>;
>;
>; Specify the X25 destinations
>;
>;
>* 01.00 Identify an incoming call destination [S R:0.-6.]: ED
>* 02.00 What is the priority [D R:0.-255. D:127.]:
>* 03.00 What is the object-id [S R:1.-6.]: ED
>* 04.00 What is the remote DTE address [S R:0.-15.]: 311066666666
>* 05.00 What is the subaddress range [S R:0.-9.]: 20
>* 06.00 What is the closed user group name [S R:0.-6.]:
>* 07.00 What is the call mask [S R:0.-32.]: 1101
>* 07.01 What is the call value [S R:1.-32.]: 1101
>;
>;
>* 01.00 Identify an incoming call destination [S R:0.-6.]: JIM
>* 02.00 What is the priority [D R:0.-255. D:127.]:
>* 03.00 What is the object-id [S R:1.-6.]: JIM
>* 04.00 What is the remote DTE address [S R:0.-15.]: 311066666666
>* 05.00 What is the subaddress range [S R:0.-9.]: 21
>* 06.00 What is the closed user group name [S R:0.-6.]:
>* 07.00 What is the call mask [S R:0.-32.]: 1001
>* 07.01 What is the call value [S R:1.-32.]: 1001
>;
>;
>* 01.00 Identify an incoming call destination [S R:0.-6.]: LARRY
>* 02.00 What is the priority [D R:0.-255. D:127.]:
>* 03.00 What is the object-id [S R:1.-6.]: LARRY
>* 04.00 What is the remote DTE address [S R:0.-15.]: 311066666666
>* 05.00 What is the subaddress range [S R:0.-9.]: 20
>* 06.00 What is the closed user group name [S R:0.-6.]:
>* 07.00 What is the call mask [S R:0.-32.]: 1001
>* 07.01 What is the call value [S R:1.-32.]: 1001
>;
>;
>* 01.00 Identify an incoming call destination [S R:0.-6.]: BILL
>* 02.00 What is the priority [D R:0.-255. D:127.]:
>* 03.00 What is the object-id [S R:1.-6.]: BILL
>* 04.00 What is the remote DTE address [S R:0.-15.]: 311066666666
>* 05.00 What is the subaddress range [S R:0.-9.]: 20
>* 06.00 What is the closed user group name [S R:0.-6.]:
>* 07.00 What is the call mask [S R:0.-32.]: 1111
>* 07.01 What is the call value [S R:1.-32.]: 1111
>;
>;
>* 01.00 Identify an incoming call destination [S R:0.-6.]:
>;
>; Specify the X29 destinations
>;
>;
>* 01.00 Identify an incoming call destination [S R:0.-6.]: MIKE
>* 02.00 What is the priority [D R:0.-255. D:127.]:
>* 03.00 What is the object-id [S R:1.-6.]: MIKE
>* 04.00 What is the remote DTE address [S R:0.-15.]: 311066666666
>* 05.00 What is the subaddress range [S R:0.-9.]: 24
>* 06.00 What is the closed user group name [S R:0.-6.]:
>* 07.00 What is the call mask [S R:0.-32.]: 1111
>* 07.01 What is the call value [S R:1.-32.]: 1111
>;
>;
>* 01.00 Identify an incoming call destination [S R:0.-6.]:
>;
>; <EOS> Do you want to:
>*    <RET> - Continue, R - Repeat section, P - Pause, E - Exit [S]:
>;
```

(continued on next page)

```
 ; ============================================================
>;  PSI - Section 4 - Specify logical names for remote DTEs
>; ============================================================
>;
>* 01.00 Identify a remote DTE [S]: ONE,11111111
>* 01.00 Identify a remote DTE [S]: TED,22222222
>* 01.00 Identify a remote DTE [S]:
>;
>; <EOS> Do you want to:
>*    <RET> - Continue, R - Repeat section, P - Pause, E - Exit [S]:
>;
>; ============================================================
>;  PSI - Section 5 - Specify required components
>; ============================================================
>;
>* 07.00 Do you want multicopy task support [D=N]? [Y/N]: Y
>;
>; <EOS> Do you want to:
>*    <RET> - Continue, R - Repeat section, P - Pause, E - Exit [S]:
>;
>; ============================================================
>;  PSI - Section 6 - Specify optional components
>; ============================================================
>;
>* 08.00 How many remote X.29 terminals are supported [D R:1.-40.]: 4
>;
>; <EOS> Do you want to:
>*    <RET> - Continue, R - Repeat section, P - Pause, E - Exit [S]:
>;
>; ============================================================
>;  PSI - PSI CEX Product Generation Procedure
>;         All questions answered at 00:23:35 on 26-AUG-83
>; ============================================================
>;
>;
>; ======================================================================
>;  NET - Section  8 - Complete the CEX System Definitions
>; ======================================================================
>;
>; Creating build files for DLX, the Direct Line Access process.
>;
>* 02.00 What is the Large Data Buffer (LDB) size [D R:192.-1484. D:518.]:
>;
>; <EOS>  Do you want to:
>*        <RET>-Continue, R-Repeat section, P-Pause, E-Exit [S]:
>;
>;
>; ======================================================================
>;  NET - Section  9 - Build the CEX System at 00:24:17 on 26-AUG-83
>; ======================================================================
>;
>; All questions have now been asked and the selected components will now
>; be built.  This may take from one to three  hours, depending  on  the
>; selection of components and the system you are running on.
>;
>PIP DB01:[110,054]CETAB.MAC/PU/NM
>PIP DB01:[110,054]AUX.DAT/PU/NM
>;
>SET /UIC=[1,2]
>LBR OU:NETHLP.ULB/CR:10:::UNI
>PIP OU:NETHLP.ULB/PU/NM
>SET /UIC=[110,24]
>SET /UIC=[1,2]
>LBR OU:[1,2]NCP.HLP=IN:[1,2]NETHLP.HLB/EX:NCP
>LBR OU:[1,2]NCPCLE.HLP=IN:[1,2]NETHLP.HLB/EX:NCPCLE
>LBR OU:[1,2]NCPLOA.HLP=IN:[1,2]NETHLP.HLB/EX:NCPLOA
>LBR OU:[1,2]NCPLOO.HLP=IN:[1,2]NETHLP.HLB/EX:NCPLOO
>LBR OU:[1,2]NCPSET.HLP=IN:[1,2]NETHLP.HLB/EX:NCPSET
>LBR OU:[1,2]NCPSHO.HLP=IN:[1,2]NETHLP.HLB/EX:NCPSHO
>LBR OU:[1,2]NCPTRI.HLP=IN:[1,2]NETHLP.HLB/EX:NCPTRI
>LBR OU:[1,2]NCPZER.HLP=IN:[1,2]NETHLP.HLB/EX:NCPZER
```

(continued on next page)

```
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCP.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCPCLE.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCPLOA.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCPLOO.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCPSET.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCPSHO.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCPTRI.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]NCPZER.HLP/RP
>PIP OU:[1,2]NCP.HLP;*/DE/NM,NCPCLE.HLP;*,NCPLOA.HLP;*
>PIP OU:[1,2]NCPLOO.HLP;*/DE/NM,NCPSET.HLP;*,NCPSHO.HLP;*
>PIP OU:[1,2]NCPTRI.HLP;*/DE/NM,NCPZER.HLP;*
>SET /UIC=[110,24]
>SET /UIC=[1,2]
>LBR OU:[1,2]CFE.HLP=IN:[1,2]NETHLP.HLB/EX:CFE
>LBR OU:[1,2]CFEDEF.HLP=IN:[1,2]NETHLP.HLB/EX:CFEDEF
>LBR OU:[1,2]CFELIS.HLP=IN:[1,2]NETHLP.HLB/EX:CFELIS
>LBR OU:[1,2]NETHLP.ULB=CU:[1,2]CFE.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]CFEDEF.HLP/RP
>LBR OU:[1,2]NETHLP.ULB=OU:[1,2]CFELIS.HLP/RP
>PIP OU:[1,2]CFE.HLP;*/DE/NM,CFEDEF.HLP;*,CFELIS.HLP;*
>SET /UIC=[110,24]
>SET /UIC=[1,2]
>LBR OU:[1,2]NDA.HLP=IN:[1,2]NETHLP.HLB/EX:NDA
.
.
.
```

[Most of the build portion of NETGEN was omitted here.]

```
.
.
.
>TKB @OU:[110,24]X29BLD.CMD
>PIP OU:[110,54]X29ACP.TSK/PU/NM
>PIP MP:[110,34]X29ACP.MAP/PU/NM
>TKB @OU:[110,24]TRABLD.CMD
>PIP OU:[110,54]TRA.TSK/PU/NM
>PIP MP:[110,34]TRA.MAP/PU/NM
>TKB @OU:[110,24]TRIBLD.CMD
>PIP OU:[110,54]TRI.TSK/PU/NM,TRADSP.TSK
>PIP MP:[110,34]TRI.MAP/PU/NM,TRADSP.MAP
>SET /UIC=[1,1]
>PIP DB01:[1,1]/NV=IN:[155,24]PSIFOR.OLB
>PIP DB01:[1,1]PSIFOR.OLB/PU/NM
>SET /UIC=[110,24]
>SET /UIC=[1,1]
>PIP DB01:[1,1]/NV=IN:[1,1]PSI.MLB
>PIP DB01:[1,1]PSI.MLB/PU/NM
>SET /UIC=[110,24]
>;
>; ==================================================================
>;  NET - Section 10 - Generation Clean Up
>; ==================================================================
>;
>; Creating NETCFG.TXT, the network configuration description file.
>; Creating NETCFE.CMD, the network configuration command file.
>; Creating NETINS.CMD, the network installation command file.
>; Creating NETREM.CMD, the network removal command file.
>;
>;
>; The network HELP file library has been placed on your target disk, as:
>;
>;      DB01:[1,2]NETHLP.ULB
>;
>; This file should be moved to your target systems library device (LB:).
>;
>;
>; ==================================================================
>;  NET - RSX-11M CEX System Generation Procedure
>;       Stopped at 01:09:55 on 26-AUG-83
>; ==================================================================
>;
>@ <EOF>
>
```

Appendix B

How to Include NETPAN (Up-line Panic Dump) in an RSX-11S System

The NETPAN component of DECnet-RSX is activated when a detectable abnormal system crash occurs. Registers are saved automatically in a predefined place in memory and a copy of the entire system memory is sent up-line. CDA or NDA can then be used to analyze the problem.

The remainder of this appendix gives an example of how to include NETPAN in an RSX-11S system when you use a distribution kit on media consisting of an RL01 or larger disk pack.

How to Include NETPAN in an RSX-11S System

The steps that you must take to include NETPAN in a system occur at the following points in the system generation process:

- In set-up operations prior to invoking SYSGEN
- In Phase I of SYSGEN
- In Phase II of SYSGEN

The operations that you must perform at these points in the system generation process are broken out in the example that follows.

Preparing for SYSGEN

Issue the following set-up instructions before you initiate the SYSGEN process:

```
>SET /UIC=[11,10]
>PIP xx:PANIC.SAV/RE=XX:PANIC.MAC             !SAVE THE NON-NETWORK PANIC DUMP SOURCE
>PIP xx:PANIC.MAC=yy:[136,10]NETPAN.MAC  !GET THE NETWORK PANIC DUMP SOURCE
>SET /UIC=[1,20]
 LBR xx ddd.OBJ=yy:[136,24]BOOTS/EX:ddd
```

where

ddd is the name of the physical line used for the up-line dump. The final three letters of *ddd* will always be DRV. For example, the physical line name for a DUP device will be DUPDRV.

xx is the RSX distribution device

yy is the DECnet distribution device

```
 DMO yy:          !DISMOUNT THE NETWORK DISTRIBUTION DISK
```

SYSGEN Phase Considerations

In the Executive Options section of SYSGEN, answer the following questions as indicated:

```
>* 50. DUMP ANALYSIS:          A- PANIC B- CRASH (CDA)    [S]: A
 * 53. Enter PANIC memory dump device CSR [O R:160000-177700 D:177564]:nnnnnn
```

where

nnnnnn is the CSR address of the physical line used for the up-line dump. This is the CSR address for the device you specified in *ddd*.

In the Assemble the Executive section of SYSGEN, you are asked whether you want to edit any of the Executive files. If you have an M9301 ROM set for bootstrapping over a DECnet device, Unit Number 0, or an M9312 ROM set for bootstrapping over a DECnet device, Unit Number 0 or 1, answer Y to the editing question and edit the Executive source file as shown.* Answer N to the editing question and do not edit the file if any of the following conditions apply:

- You are not using an M9301 or M9312 ROM.
- You want to boot the system over a unit number greater than 0 using an M9301 or over a unit number greater than 1 using an M9312.
- You do not want to use the hardware bootstrap.

```
>* Do you wish to edit any of the Executive files? [Y/N]:Y
>;
>;     SGN - Pausing to allow editing of Executive source

AT. -- PAUSING. TO CONTINUE TYPE "RES ...AT."

>EDI RSXMC.MAC
[000NN LINES READ IN]
[PAGE 0]
*I
R$$BOT=0    ; AUTOMATIC REBOOT THROUGH THE M9312 OR M9301 ROM

*ED
[EXIT]


>RES ...AT.
```

---

* EDI is the editor used in the examples shown in this appendix. You can, however, use any editor supported by the operating system to make the changes indicated.

NOTE

> If you do not include the symbol R$$BOT=0 in RSXMC.MAC, the NETPAN routine attempts a software automatic reboot of the system through the device associated with the up-line dump CSR address you specified in the Executive Options section of SYSGEN. If you do include R$$BOT=0, NETPAN jumps to the M9301 or M9312 ROM and allows the ROM to perform the automatic bootstrap operation.

SYSGEN Phase II Considerations

At the beginning of Phase II, before building the Executive, you are asked whether you want to edit the Executive build file. Answer YES to the question and then edit the file as shown. If however, you are planning to reboot the system through an M9312 ROM, see the discussion below.

```
>* DO YOU WISH TO EDIT THE EXECUTIVE BUILD FILE? [Y/N]:Y
>EDI RSXBLD.CMD
[000NN LINES READ IN]
[PAGE    1]
*PL NLDRV
[1,20]RSX11S/LB:NLDRV
*I
[1,20] ddd
```

where

ddd is the name of the physical line used for the up-line dump. The final three letters of *ddd* will always be DRV. For example, the physical line name for a DUP device will be DUPDRV.

If you are planning to reboot the system through an M9312 ROM, you must do a more extensive edit of the Executive build file as shown:

```
* DO YOU WISH TO EDIT THE EXECUTIVE BUILD FILE? [Y/N]:
 EDI RSXBLD.CMD
[000NN LINES READ IN]
[PAGE    1]
*PL NLDRV
[1,20]RSX11S/LB:NLDRV
*I
[1,20]ddd
*PL GBLDEF
GBLDEF=$USRTB:0
*I
GBLDEF=REBOOT:xxxxxx
```

where

xxxxxx is one of the reboot addresses listed in Table B-1.

Table B-1: Reboot Addresses for the M9312 ROM

Option	Unit Number	CPU Diagnostics	Reboot Address
A	0	NO	173004
A	1	NO	173030
B	0	NO	173204
B	1	NO	173230

NOTES:

1. The reboot addresses contained in Table B-1 signify boot entry points that are independent of the device type used.
2. The M9312 has four ROM slots. Only three of these slots are needed for a DECnet bootstrap ROM. Therefore, the M9312 ROM can be inserted into either Slots 1,2, and 3 or Slots 2,3, and 4. (Option A in Table B-1 means that the ROM is inserted in Slots 1,2, and 3. Option B means that the ROM is inserted in Slots 2,3, and 4.)
3. When you define a reboot address using GBLDEF, the following TKB diagnostic message will appear during the Executive build:

   ```
   *DIAG* - MODULE ddd MULTIPLY DEFINES SYMBOL REBOOT
   ```

   where

   ddd is the name of the physical line that you previously specified for the up-line dump.

Regardless of the type of ROM you use, exit from editing mode in the following manner:

```
*ED
[EXIT]
```

RSX-11S SYSGEN will then proceed to build the Executive with the Up-line Panic Dump routine included.

Appendix C
Rebuilding CETAB, CEX, and DDMS

This appendix tells how to rebuild CETAB, CEX, and DDMs. These components cannot be rebuilt with a Component Mode generation. Rebuilding these components may be necessary either due to their accidental deletion, or due to patches to the objects.

Logical Device Assignments

Before executing any of the commands described below, you must first make the following logical device assignments:

```
ASN ddu:=OU:     !The target device (where tasks are to go)

ASN ddu:=LB:     !The system device (where system libraries are)

ASN ddu:=MP:     !The device where maps are to go (may be NL:)

ASN ddu:=IN:     !The Network, DECnet or PSI Object
                 !Disk, created by PREGEN
```

List of Commands to Be Used.

A subset of the following list of commands is referenced by letter for each individual component. For example, rebuilding the PCL DDM requires commands b,c, and d. The *xxx* shown in the command is the name of the individual component (CETAB, CEX, and PCL.) The *x* in the UIC (such as [*x*,24] indicates the group code chosen during NETGEN.

```
a) MAC @[x,24]xxxASM.CMD
b) TKB @[x,24]xxxBLD.CMD
c) PIP  [x,54]/NV=IN:[131,24]xxx.DAT
d) PIP  [x,54]/NV=IN:[131,24]xxxST.DAT
e) PIP  [x,54]/NV=IN:[131,24]xxxLN.DAT
f) PIP  [x,54]/NV=IN:[131,54]xxxMOD.TSK
g) PIP  [x,54]/NV=IN:[131,54]xxxMC.TSK
h) PIP  [x,54]/NV=IN:[152,24]xxx.DAT
i) PIP  [x,54]/NV=IN:[152,24]xxxLN.DAT
j) PIP  [x,54]/NV=IN:[152,54]xxxMC.TSK
k) PIP  [x,54]/NV=IN:[152,54]xxxTA.DAT
l) PIP  [x,54]/NV=IN:[152,54]xxxDG.TSK
```

NET Components

To rebuild the following processes, IN: must be assigned to the Network object disk.

Process Name *(as in xxx above)*	**Commands to Use** *(see list of commands above)*
CETAB	a, b
CEX (and AUX)	b

DEC Components

To rebuild the following Device Driver Modules (DDMs), IN: must be assigned to the DECnet object disk.

DDM Name *(as in xxx above)*	**Commands to Use** *(see list of commands above)*
DL, DLV, DMC	b, c
DPV, DU, DUP, DUV, UNA, QNA	b, c
DMP, DMV, PCL	b, c, d
DZ, DZV	b, c, e
DV	b, c, e, f
KDP	b, c, e, g
KDZ	b, c, e, f, g

PSI Components

To rebuild the following Device Driver Modules (DDMs), IN: must be assigned to the PSI object disk.

DDM Name *(as in xxx above)*	**Commands to Use** *(see list of commands above)*
DLM	b, h, k
SDP	b, h
SDV	b, h
KMX	b, h, i, j, l

INDEX

C

CCR, 2-8
CETAB.MAC, 1-9, 5-31
CFE, 2-2, 4-35, 4-36
Checkpointing, 3-9, 3-11, 3-13, 3-14, 3-17
Communications Executive, 1-5
Components,
  always built, 2-4
  never used, 2-4
  optional, 2-4
  required, 2-4
Configuration File Editor, 1-9, 1-10
CSR address, 4-19

D

DCP, 2-5, 2-7
DLL, 2-8
DLM, 2-10
DLX, 2-5, 2-7, 2-8, 3-5, 4-39, 5-8, 5-14, 5-18
DSR Pool, 3-17, 3-19
DUK, 2-11
DUM, 2-8

E

ECL, 5-8
EPM, 2-5, 2-7
EVC, 2-4, 4-32
EVL, 2-4, 4-32
EVL/EVC, 4-30
EVR, 2-5, 5-12
Executive address space, 3-17, 3-18
EXELIB.OLB, 4-5, 4-6
EXEMC.MLB, 4-5, 4-6
Explanatory text, 1-3
Extended network support, 5-5, 5-8, 5-31

F

FAL, 2-9, 5-22
FTS, 2-9, 5-22
FTSDEQ, 2-9

H

HLD, 2-8
Host system,
  requirements, 2-1

I

Identifying nodes, 2-2
Installing DECnet, 1-9
Installing DECnet,
  on RSX-11M/M-PLUS, 7-1
Installing tasks,
  using VMR commands, 7-6

K

KDA, 2-11
Kit,
  end node, 1-1
  full function, 1-1
  pregenned end node, 1-1
KMCL, 2-4, 2-7, 4-30, 4-31

L

LAB process, 6-15
Library,
  Memory Resident, 1-1
  Supervisor Mode, 1-1
LIN, 2-8, 5-12
Loading the network,
  calling sequence, 3-9
  using NCP, 3-8
  using VNP, 3-8
LOO, 5-12
LSN, 2-10, 5-27

M

MCM, 2-9, 5-22, 5-26
MIR, 5-12
MLD, 2-4, 2-7, 4-30
Modifying NETINS.CMD,
  to add a new component, 7-3
  to change the way a task is installed, 7-3
  to install a task in a different partition, 7-3
  to install and start network automatically, 7-3

N

NCP, 1-10, 2-2, 2-5, 3-6, 3-9, 4-22, 4-35
NCT, 2-9, 5-27
NDA, 4-35, 4-36
NETCFE.CMD, 1-9
NETCFG.TXT, 1-9
NETFOR.OLB, 2-5
NETGEN, 1-1, 1-2
NETGEN modes,
  Component, 1-7
  Dry Run, 1-7
  Question and Answer, 1-7
  Restore, 1-7
NETGEN organization,
  DEC, 1-5
  NET, 1-5
NETGEN organization, (Cont.)
  PSI, 1-5
NETINS.CMD, 1-9, 3-2, 3-10, 4-8, 5-24
NETLIB.MLB, 2-5
NETPAN, 3-14, 5-18
NETREM.CMD, 1-9
Network Control Program, 1-10
Network Installation Command file,
  executing NETINS.CMD, 7-1
  questions, 7-3
NFT, 2-8, 5-22
NICE, 2-5, 3-10, 5-12
NMDRV, 2-5, 2-7, 3-9, 4-35
NMVACP, 4-35
Node addresses, 2-2
Node names, 2-2
NTD, 2-5, 5-12, 5-13
NTDEMO, 1-7, 2-5, 5-12, 5-13
NTINIT, 3-5, 3-9, 4-11, 4-30
NTL, 3-9, 4-30
NVP, 2-8, 5-12, 5-15
NW process, 6-15

P

Packet Switching Network (PSN), 2-7, 4-24, 4-25, 6-1
Partition layout,
  after SYSGEN, 3-3
  definition, 3-1
  for adding CEXPAR, 3-17, 3-18
  for large RSX-11M systems, 3-7
  for medium RSX-11M systems, 3-6
  for other partitions, 3-20
  for RSX-11M, 3-2
  for RSX-11S, 3-10
  for small RSX-11M systems, 3-5
  for user applications, 3-5
  to avoid loading problems, 3-8
  to include NETPAN, 3-14
Partition layout,for CEXPAR, 3-1
Partition layout,for RSX-11M-PLUS, 3-2
Partitions,
  for GEN, 3-1
  system controlled, 3-13
PCL, 4-18, 4-23
Permanent virtual circuit (PVC), 4-24, 6-5, 6-6
PLI process, 6-15
PREGEN, 1-1, 1-2
PREGEN,
  copying media, 3-23
  description, 3-20

PREGEN, (Cont.)
  dialog, 3-26
  disk distribution media, 3-24
  for a small dual-disk system, 3-22, 3-23, 3-27, 3-32
  for a standard system, 3-21, 3-23, 3-28
  initializing the disk, 3-23
  magnetic tape distribution media, 3-25
  notes, 3-21
Pregenned end node,
  break responses, 8-2
  dialog, 8-3
  distribution kit, 8-1
  explanatory text, 8-2
  installation procedure, 8-1
  preliminary steps, 8-1
  user responses, 8-2
PSI, 1-4, 1-5
PSI.MLB, 2-11, 6-17
PSIFOR.OLB, 2-11, 6-17

Q

QMG.OLB, 4-6
Question responses,
  Break, 1-5
  End-of-section, 1-4
Queue Manager (QMG), 3-16, 4-13

R

RCP, 2-7, 5-8
Response format,
  character string, 1-3
  numeric, 1-3
  YES/NO, 1-3
RMHACP, 5-27, 5-28
RMHACP/HTDRV, 2-9
RMS FAL, 5-23, 5-24
RMS11X.ODL, 4-6, 5-23, 5-24
RMS12X.ODL, 4-6, 5-23
RMSLIB.OLB, 4-6, 5-23
RMSRES.STB, 5-23
RMSRES.TSK, 5-23
RMSRLX.ODL, 5-23
RMT, 2-5, 3-15, 3-16, 5-27
RMT/RMTACP, 2-9
Routing parameters,
  highest node address, 2-3
  line/circuit cost, 2-3
  maximum hop count, 2-3
  maximum visits count, 2-3
RSX11M.STB, 4-5
RSX11S.STB, 4-5
RSXMAC.SML, 4-5, 4-6
RSXMC.MAC, 3-11, 3-14, 4-5
RTH, 2-9, 5-27

S

Saved-response files, 1-7
SLD, 2-8
Standard function system, 3-13
Switched virtual circuit (SVC), 4-24, 6-6
SYSGEN, 1-1, 3-1, 3-2, 3-8, 3-11, 3-12
SYSGEN,
  dynamic checkpoint support, 3-14
  editing files, 3-14
  editing SYSVMR.CMD, 3-17
  Executive options, 3-13
  FTS support, 3-16
  standard function system, 3-13
  system controlled partitions, 3-13
  terminal driver support, 3-15
SYSGEN,
  support for DECnet, 3-12
SYSLIB.OLB, 4-5, 4-6
System controlled partitions, 3-10, 3-13
System memory size,
  for CEX, 3-19
  for FCPPAR, 3-5
  for Files 11 ACP, 3-4
  for GEN, 3-2
  for NETACP, 3-4
  for NMVACP, 3-5
  for other partitions, 3-20
SYSVMR.CMD, 3-17

T

Target,
  defining network characteristics, 6-1
  defining remote nodes, 5-1
  defining the system, 4-12
  definition, 1-1
  disk capacity, 1-8, 2-1
  system requirements, 2-2
TCL, 2-10, 5-27, 5-30
Testing the network, 1-9
TLK, 1-10, 2-10, 3-15, 5-27, 5-29
TRA, 2-10, 6-17
Transport subaddress, 6-3
TRI, 2-10, 6-17
Tuning the network, 1-10

U

UIC group code, 1-10, 7-8

UIC group code,
  DECnet, 8-3
  for NETGEN output, 4-8
  network, 7-3, 7-5
User ID, 4-8, 4-10
User responses, 1-3, 8-2

V

Vector,
  highest interrupt address, 3-12
Virtual Monitor Routine (VMR), 3-2, 3-17, 3-19, 4-27, 7-5, 7-6, 7-7, 7-10
Virtual Network Processor, 1-10
Virtual Network Processor (VNP), 7-8, 7-10, 8-5
VMLIB.OLB, 5-23
VNP, 1-10, 2-2, 4-35, 4-36

X

X.29 support, 6-3, 6-10, 6-17
X25ACP, 6-10, 6-14, 6-15
X29ACP, 2-10, 3-16, 5-29, 6-17

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AA-H225C-TC

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